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STREPTOMYCIN: A VALUABLE ANTI-TUBERCULOSIS AGENT

BY

WILLIAM H. FELDMAN, D.V.M., M.Sc., D.Sc.
Division of Experimental Medicine, Mayo Foundation

AND

H. CORWIN HINSHAW, M.D., Ph.D., D.Sc.
Division of Medicine, Mayo Clinic, Rochester, Minnesota

To find a specific therapeutic substance that will arrest or impede the progress of tuberculosis and permit the intrinsic factors of healing to operate successfully has been the goal of countless investigators since the beginning of the modern era of chemotherapy. Certainly the need for a specific drug treatment to assist in combating human tuberculosis has been and continues to be a compelling one.

During the past decade many infectious diseases have proved to be highly vulnerable to therapeutic attack by a variety of chemotherapeutic agents. Tuberculosis, however, has until recently resisted specific drug treatment successfully. In the quest for an effective substance in the treatment of tuberculosis little, if any, real basis for encouragement was evident until the advent of the sulphonamide compounds.* The observations that sulphanilamide had exerted a slight but definite deterrent action on the pathogenesis of tuberculosis in guinea-pigs prompted additional work with a large number of other sulphonamides in experimental tuberculosis. The results indicated that none of these drugs met the requirements of a therapeutic weapon sufficiently to justify their use in clinical tuberculosis.

Eventually drugs remotely related to sulphanilamide but chemically definitely dissimilar in certain important aspects were found to be greatly superior to any of the sulphonamide compounds in combating experimental tuberculosis. These latter drugs—known commonly as sulphone compounds—were derivatives of 4,4′-diaminodiphenyl sulphone. Among the better-known sulphone drugs that have figured in the recent revival of chemotherapy of tuberculosis are "promin" (known as "promanide" in Britain), "diasone," and "promizole."

Historical Résumé

Since the ability of certain of the sulphone compounds to suppress tuberculosis almost completely in the highly susceptible guinea-pig was so unprecedented, and since the significance of this phase of the recent development of tuberculo-chemotherapy to the present status of the drug treatment of leprosy is seldom recounted, a brief résumé of the development of the more recent antibacterial attack on tuberculosis seems appropriate.

As mentioned previously, the observations concerning the effects of sulphanilamide on the progress of tuberculosis in guinea-pigs suggested that the sulphonamide drugs and related compounds were worthy of further exploration. In October, 1940, Feldman, Hinshaw, and Moses reported the first experimental study of the use of promin in experimental tuberculosis induced by human tubercle bacilli.† The results when confirmed provided sound evidence that the drugs had exerted marked deterrent effects on the progress of a potentially lethal infection. With the recognition of this fact tuberculosis could properly be removed from the list of infections previously considered resistant to the suppressive action of chemotherapeutic agents.

After this initial observation with promin the effectiveness of several other sulphone compounds as anti-tuberculosis agents was demonstrated (Feldman, 1946b). This phase of the work served to establish firmly the ability of a number of complex synthetic organic compounds to exert a measurable therapeutic effect on infections induced experimentally by human tubercle bacilli.

Parenthetically it is of interest to note that the work with the sulphone compounds, especially promin, in experimental tuberculous infections stimulated an important development in the chemotherapeutic attack on leprosy. Several reports now available indicate definitely that promin and subsequently promizole and diasone have ushered in an important new era in the specific drug treatment of this disease. An objective appraisal of the results up to the present time indicates that this newer therapy in leprosy is definitely encouraging (Faget *et al.*, 1946).

The advent of specific therapy with antibiotics which followed the development of penicillin again focused attention on the possibility of successful chemotherapy of tuberculosis with antibiotic substances. This was not a new approach to the problem of specific drug therapy in tuberculosis by the use of antagonistic substances of bacterial origin. As a matter of fact a report on this form of therapy had been published by Cantani in 1885. A review of the many subsequent reports of different investigators who have explored this approach to the treatment of tuberculosis discloses many antibiotic agents capable of antagonistic action against tubercle bacilli (Feldman, 1946a, 1946b, 1946c; Hart, 1946; Waksman, 1947). However, observations on the range of activity of the substances studied were, with few exceptions, limited to *in-vitro* tests. A notable exception is streptomycin, which, in addition to demonstrating its antagonism to tubercle bacilli in the test-tube, has demonstrated its effectiveness against tuberculous infections (Feldman and Hinshaw, 1944; Feldman, Hinshaw, and Mann, 1945; Youmans and McCarter, 1945). As the search continues, the possibility exists of eventually obtaining not one but perhaps several additional antibiotic agents that will be equal if not superior in potency to streptomycin.

As a result of the information that has accumulated since the first report on the use of sulphanilamide in experimental tuberculosis was published, a chemotherapy of tuberculosis

* For a review of the development of the chemotherapy of tuberculosis the lectures by Feldman (1946a, 1946b, 1946c), by Hart (1946), and by Waksman (1947) may be consulted

†A few months previously Rist, Bloch, and Hamon (1940) had reported independently a definite antagonistic effect of 4,4′-diaminodiphenylsulphone on tuberculosis of rabbits and guinea-pigs infected with avian tubercle bacilli.

of practical significance has been evolved. At last, after countless disappointments, the practical therapeutics of tuberculous infections has been advanced by a drug of considerable specificity and usefulness. By the use of streptomycin it is now possible for the first time to arrest by specific chemotherapy the progress of several different clinical types of potentially fatal tuberculosis.

Streptomycin in Experimental Tuberculosis

Therapeutic Efficacy.—The effect of streptomycin on the course of experimental tuberculosis in guinea-pigs and in mice is striking. Under prescribed conditions the potency of this antibiotic is sufficient to alter to a marked degree the usual pathogenesis of infections established by fully virulent tubercle bacilli of the human and of the bovine types. It is of much significance that guinea-pigs inoculated subcutaneously with an effective dose of tubercle bacilli will respond to treatment usually in a dramatic manner. Compared with untreated controls, such animals have an extended longevity, and the residual signs of infection either are not demonstrable grossly or microscopically or, if present, are usually inactive lesions characterized by fibrosis, calcification, or other signs of quiescence. In the experimentally infected animals the tempo of the therapeutic effects is relatively rapid. Evidence of deterrent action may be observed after three weeks' treatment.

The specificity of streptomycin for tubercle bacilli and its ability to alter the course of otherwise irreversibly fatal infections are convincing as shown by experiments wherein guinea-pigs are inoculated intravenously with large doses (1 mg.) of virulent tubercle bacilli. Tuberculosis established by this procedure usually becomes a rapidly fulminating process within a short time. However, if treatment with streptomycin is started within three to four days after the animals have been inoculated the treated animals will live many months longer than those not treated (Feldman, Karlson, and Hinshaw, 1947). The same therapeutic restraints can also be observed in white mice inoculated intravenously with virulent tubercle bacilli and treated with streptomycin (Youmans and McCarter, 1945).

Considering the exceedingly formidable character of the widely disseminated infection that follows the introduction of tubercle bacilli direct into the venous circulation, one cannot avoid the conclusion that streptomycin is an antituberculosis agent of considerable potentiality (Feldman, Karlson, and Hinshaw, 1947). It is suggested that in the future new substances antagonistic to tubercle bacilli be subjected to trial in tuberculous infections induced intravenously. Such a procedure should provide valuable data for comparison with the effectiveness of streptomycin.

Dosage.—The therapeutic range of streptomycin in the treatment of tuberculous guinea-pigs appears to vary within rather wide limits. In our experience a daily dose of 4 to 6 mg. administered subcutaneously is therapeutically effective for animals weighing 500 to 800 g. Much larger doses do not seem to be more effective. We have found daily doses of 2 mg. inadequate. However, in many infected animals this smaller dose does exert a definite deterrent influence, but the results are, generally speaking, inferior to those produced by doses of greater magnitude. In the treatment of tuberculous mice with streptomycin a daily dose of 3 mg. divided into four injections has proved effective (Youmans and McCarter, 1945).

Frequency of Medication.—In our earlier studies on streptomycin in experimental tuberculosis we administered the daily dose of the drug in four equally divided injections six hours apart. Later, as a result of experimental observations (Feldman, Hinshaw, and Karlson, 1947), we found that the frequent administration of streptomycin was not essential to a satisfactory therapeutic effect. It was observed that daily doses of 6 mg. divided into two equal injections twelve hours apart were adequate. Furthermore, we observed that animals treated every alternate week appeared to receive essentially the same therapeutic benefit as those on a daily schedule of treatment.

We now prefer to administer the drug every twelve hours. However, it is our impression that streptomycin can be given to tuberculous guinea-pigs, with satisfactory results, once daily or perhaps once every second or third day. There is no evidence indicating that its therapeutic effectiveness in experimental tuberculosis is dependent on frequent administration of the drug. Certainly it is not necessary to administer streptomycin every two to three hours to obtain the desired effects.

Toxicity for Animals.—Although the administration of streptomycin to tuberculous human beings usually provokes certain objective signs of toxicity of varying severity, this drug is well tolerated by guinea-pigs and by mice in doses within the therapeutic level. Guinea-pigs treated daily for five to six months have shown a normal increase of weight and size and have at the end of the experiment the appearance of normal healthy animals. What the maximal tolerated dose for guinea-pigs may be is uncertain. So far as we know, doses of streptomycin even in excess of the therapeutic effective dose do not induce demonstrable damage in the liver or kidneys of guinea-pigs or mice.

In some animals, particularly monkeys and dogs, signs of toxicity have been reported (Molitor *et al.*, 1946). In these animals toxicity was indicated by transient anaemia, mild to severe proteinuria, and casts and blood cells in the urine. Dogs receiving streptomycin have been noted to manifest signs of vestibular dysfunction. Disturbance of metabolism of fat in the liver and kidneys of monkeys and dogs has been reported (Molitor, 1947).

Summary of Evidence in Support of Clinical Trials

In reviewing the evidence to justify the use of streptomycin in the treatment of tuberculous patients several facts of considerable signficance may be recounted:

(1) The experimental animal used was the highly susceptible guinea-pig, which has a minimum of intrinsic resistance to infection by virulent mammalian tubercle bacilli. (2) The beginning of treatment was delayed usually from two to seven weeks after the animals had been inoculated with tubercle bacilli. Thus the conditions of the experiments were severe. Furthermore, the conditions were those of therapy and not of prophylaxis. (3) Treatment extended the lives of the infected animals indefinitely. (4) In many treated animals there was a reversal of a previously positive to a negative reaction to tuberculin. (5) As a consequence of treatment the usual course of the disease was dramatically modified even though the animals had been infected by intravenous inoculation. (6) There was a marked tendency for infected tissues to mobilize factors of repair and resistance, and as a result lesions resolved, fibrosed, hyalinized, or calcified. In a word, under the influence of treatment with streptomycin the tuberculous lesions in an infected animal were converted from an advancing destructive process to one of regression and arrest.

The evidence obtained from the experimental studies amply justifies the conclusion that streptomycin is a highly potent antagonistic agent against tuberculous infections in animals.

The favourable therapeutic index of streptomycin in tuberculous guinea-pigs and the further fact that the drug was well tolerated by these animals provided acceptable reasons for extending the investigation to tuberculous patients.

Residual Infectivity after Treatment.—It is our impression that in tuberculous guinea-pigs streptomycin in most

instances exerts its beneficial effects by suppressing the normal growth-progression of the tubercle bacilli rather than by acting in a bactericidal capacity. We have, however, observed infected guinea-pigs, treated for a prolonged period with streptomycin, in which no residual infection could be demonstrated in the spleen by *in-vivo* tests. In addition the same animals failed to react to tuberculin, although at the beginning of treatment sensitivity to tuberculin had been noted (Feldman, Hinshaw, and Mann, 1945).

Although the question is difficult to decide with finality, it seems likely that at least in some infected animals most if not all of the infective bacteria are eventually eliminated as a direct or an indirect consequence of treatment. However, in our experience this is not true in the majority of instances. Even after treatment for many months and in the absence of recognizable alteration of tissue the presence of fully virulent tubercle bacilli can be demonstrated in the guinea-pigs by suitable procedures. For this reason it must be concluded that the major effect of streptomycin on tubercle bacilli is that of a bacteriostatic agent.* It appears that the concentrations of streptomycin which are attained in the blood and tissues of animals and man are too low to have a direct bactericidal effect.

Streptomycin in Clinical Tuberculosis

The bacillus of tuberculosis produces a number of different diseases in human beings. With this fact recognized, it should not be anticipated that any one form of treatment should be equally applicable to all these diseases. However, these several diseases are all caused by the same micro-organism, *Mycobacterium tuberculosis,* and if the organism is so situated as to be exposed to the antagonistic action of streptomycin the suppressive action of the drug should have a certain degree of effectiveness. Studies have shown that streptomycin is not distributed through all tissues of the body in equal concentration (Baggenstoss, Feldman, and Hinshaw, 1947). Furthermore, the mechanical defects which are produced in different structures by the destructive action of tuberculosis will create special clinical and surgical problems which cannot be met completely with any antibacterial agent, regardless of its efficacy (Hinshaw, 1947a).

Miliary and Meningeal Tuberculosis

Generalized haematogenous tuberculosis of human beings most closely resembles the form of tuberculosis which is produced in guinea-pigs and mice experimentally. Such haematogenous forms of tuberculosis as miliary tuberculosis and tuberculous meningitis have in the past been totally refractory to all therapeutic efforts and have had a mortality rate approaching 100%. Until the advent of streptomycin there was no method of treatment which produced even temporary suppression of these diseases or amelioration of the distressing symptoms caused by them.

It is now well established that streptomycin treatment may be effective in bringing about a clinical remission in a considerable percentage of cases of miliary tuberculosis and of tuberculous meningitis (Hinshaw, Feldman, and Pfuetze, 1946 ; Council on Pharmacy and Chemistry, 1947). It remains to be seen how often these remissions may be prolonged and extended to the point at which one is justified in regarding the disease as cured. We have observed remissions which have lasted for more than two years, and we have patients now under observation who apparently remain well and who eventually can be pronounced essentially cured if this favourable progress continues. When miliary tuberculosis and tuberculous meningitis have been diagnosed at an early stage of the disease and have been treated promptly and adequately, more than 50% of these patients may enjoy a complete remission of all symptoms and of all radiographic and bacteriological evidence of the infection. Unfortunately, some of these patients will suffer from recurrence of the disease process. In those instances in which the recurrent disease is due to a streptomycin-resistant strain of tubercle bacilli no hope of recovery from the second attack should be entertained. It will probably be at least five years before it can be known to what degree streptomycin treatment will reduce the formerly almost universal mortality rate from these diseases. In the meantime, we would emphasize the importance of starting treatment with streptomycin at the earliest possible moment after the diagnosis of miliary tuberculosis or of tuberculous meningitis has been made.

Pulmonary Tuberculosis

This constitutes the cause of more than 90% of all the deaths from tuberculous infection. The wide variability of tuberculous lesions produced in the lungs and the frequency with which spontaneous recovery from pulmonary tuberculosis is realized make the evaluation of any remedy in this form of disease most difficult (Hinshaw and Feldman, 1944).

Several hundred patients with varying forms of pulmonary tuberculosis have received treatment with streptomycin during the past three years in various American hospitals, and certain conclusions are now tenable (Council on Pharmacy and Chemistry, 1947 ; Hinshaw, 1947b). All physicians who have employed streptomycin extensively in the treatment of pulmonary tuberculosis have agreed that patients with progressive disease whose symptoms have been marked often enjoy relatively prompt improvement of symptoms, with reduction in the amount of expectoration. There are also a decrease of fever and an improvement of the systemic manifestations of pulmonary tuberculosis. Previously progressive disease becomes at least temporarily quiescent under the influence of streptomycin therapy, and this suppression of the acute disease process is quite uniform during the first few weeks of treatment.

The clinical trend after the first few weeks of treatment depends on whether or not the tubercle bacilli are resistant to the effects of streptomycin and whether or not the destructive nature of the disease is such as to prevent its arrest and the disappearance of bacilli during this period of effective action. Some patients continue to improve for many weeks or months, whether or not streptomycin treatment is continued. The physician is occasionally disappointed to observe a reactivation of the disease within a short time after streptomycin treatment has been discontinued. This tendency to reactivation of previously progressive tuberculosis constitutes strong evidence in favour of the thesis that the drug *in vivo* is a truly effective suppressive agent. There is increasing evidence that streptomycin combined with collapse therapy and other forms of treatment may be effective when either one alone would probably fail.

Tuberculous Laryngitis and Endobronchitis

Tuberculous Laryngitis.—Streptomycin has also been found to be useful in some of the most distressing complications of pulmonary tuberculosis which had previously been refractory to nearly all therapeutic efforts. Tuberculous laryngitis has responded to streptomycin treatment (Figi and Hinshaw, 1946) in a very large percentage of cases, and it is now widely believed that use of the drug is clearly indicated in the more severe and acute phases of this tuberculous disease, even when such treatment is likely to achieve only palliative results. Other ulcerating lesions about the oropharynx and tongue respond to streptomycin in a similar manner. In our experience the most spectacular results with streptomycin treatment of lesions in the larynx have been in those patients with maximal laryngeal involvement and with acute forms of pulmonary tuberculosis without extensive cavitation, and in those patients who have tuberculous laryngitis with minimal evidence of pulmonary tuberculosis.

Endobronchial Tuberculosis.—Active ulcerating lesions of the tracheo-bronchial tree, which are being observed with increasing frequency in the United States, have also responded in a uniform manner to streptomycin treatment (Hinshaw, Feldman, and Pfuetze, 1946 ; Council on Pharmacy and Chemistry, 1947). The serious potentialities of this type of tuberculosis would justify streptomycin treatment under many circumstances. The end-result of tracheo-bronchial tuberculosis is often a bronchial

* The question of the action of streptomycin on tubercle bacilli *in vitro* was the subject of a recent report by Smith and Waksman (1947).

stricture as a result of peribronchial fibrosis. It is immediately obvious that bronchial strictures of this type cannot be precluded and will not yield to any type of antibacterial treatment, and if the degree of obstruction is considerable, pulmonary resection is likely to be required if the stricture is so situated as to make such operation feasible.

Tuberculous Sinuses, Lymph Nodes, Bones, and Joints

Tuberculosis of lymph nodes, of bones and joints, and other types of tuberculosis that produce draining cutaneous sinuses have been treated with streptomycin in a sufficient number of cases to indicate that clinical results are satisfactory in a very high percentage of cases (Hinshaw, Feldman, and Pfuetze, 1946; Council on Pharmacy and Chemistry, 1947; Hinshaw, 1947b). Within a few days to a few weeks after starting treatment the drainage of pus ceases and a scab forms over the sinus, and within a few more weeks, when this scab is dislodged, the sinus appears to be healed. If the sinus tract leads to some large accumulation of pus, such as a cold abscess or an empyema cavity, healing is much less likely to occur, and if it does occur there is much greater danger of a recurrence of drainage of pus. It begins to seem probable that large accumulations of tuberculous pus should be drained by wide-open incision as soon as possible after streptomycin treatment has been instituted. This is in contrast to previously accepted surgical practices. It is probable that tuberculous suppuration may be treated in much the same way as suppurative diseases due to pyogenic bacteria have been treated in the past, provided streptomycin treatment is combined with such surgical intervention.

Cutaneous tuberculosis has not been studied sufficiently to warrant the formation of conclusions, except in the case of scrofulodermia which is associated with tuberculous draining sinuses (O'Leary *et al.*, 1947). This has been discussed in the preceding paragraph. A few patients with lupus vulgaris have been treated, and have appeared to respond sufficiently well to indicate the need for further studies.

Tuberculosis of bones and joints involves a series of problems almost as complicated as those afforded by pulmonary tuberculosis. It is immediately evident that no antibacterial drug can promote the regeneration of destroyed structures, and a comparison with chronic osteomyelitis appears logical. Experience gained thus far has indicated that the principal uses of streptomycin for treatment of tuberculosis of bones and joints are to prevent progression of the disease and to afford protection during and after surgical procedures on the tuberculous joints. In early forms of tuberculosis of joints involving the synovial membrane alone, streptomycin treatment in itself may be adequate to arrest the tuberculous process and hence to avoid subsequent destructive changes, crippling deformities, and the need for surgical treatment.

Tuberculous Enteritis and Peritonitis

Tuberculous enteritis is another most distressing complication of pulmonary tuberculosis. It now seems that streptomycin treatment of this disease yields a gratifying degree of symptomatic relief very promptly in a large percentage of patients. It remains to be determined how permanent these effects may be, but, even if the results prove to be merely palliative, treatment is well worth while, and in some other instance may be the crucial factor in permitting the eventual recovery of the patient.

Tuberculous peritonitis has appeared to respond to streptomycin treatment in the small number of cases in which this treatment has been applied thus far. Judgment of therapeutic results in this disease is more difficult than in other forms of tuberculosis because of the fact that the diagnosis has usually been arrived at as a result of surgical exploration and because of the fact that surgical exploration in itself is thought frequently to exert a beneficial effect on tuberculous peritonitis.

Use of Streptomycin Before and After Surgical Procedures

The prophylactic use of streptomycin in conjunction with radical types of thoracic surgical treatment is being put to test in a number of institutions in the United States (Council on Pharmacy and Chemistry, 1947; Glover, Clagett, and Hinshaw, 1947). It has already been determined that streptomycin is of little value in the treatment of advanced and chronic tuberculous empyema (Hinshaw, Feldman, and Pfuetze, 1946). Whether better results will be achieved by surgical treatment of tuberculous empyema in combination with streptomycin remains to be ascertained. There is reason to hope that streptomycin treatment may prevent the development of tuberculous empyema; our surgical colleagues have not witnessed tuberculous empyema following intrathoracic operations for tuberculosis when operation was performed in combination with streptomycin treatment, except in a few instances in which operation was carried out after the tubercle bacilli had become resistant to the effects of streptomycin.

Clinical Toxicity.—Streptomycin is a drug of moderate toxicity when compared with such drugs as the sulphonamide compounds, but it is definitely more toxic than penicillin. The toxicity of streptomycin is negligible when the drug is used for brief periods in the treatment of non-tuberculous infections. However, when tuberculosis is treated with streptomycin it probably is necessary to utilize the drug for many weeks, and this results in neurotoxic manifestations which are described later. Our colleague Dr. Karl Pfuetze (Medical Director, Mineral Springs Sanatorium, Cannon Falls, Minnesota) has been interested especially in toxicity of streptomycin and the efficacy of the drug when given in small doses. His studies, which have now been in progress for at least two years, have shown clearly that streptomycin is effective in doses as small as 1 g. a day, and perhaps the dose may be still further reduced in many clinical circumstances. When the total daily dose is 1 g., fewer than 50% of patients experience any toxic manifestations whatsoever, and only a few of these complain to any considerable degree. Even these usually recover when treatment is discontinued (Pfuetze, personal communication).

Dosage

The minimal effective dose of streptomycin has not been determined for the various clinical types of disease, but we would suggest that in tuberculosis the average daily dose be approximately 1 g. for a patient of average weight. McDermott (personal communication) has suggested a dose of 20 mg. per kilogram of body weight, which appears to be a reasonable and effective dose and one which will yield minimal toxic results. In previous communications we have recommended that streptomycin be injected at frequent intervals so as to maintain a constantly elevated blood level of the drug. However, as a result of experiments carried out on guinea-pigs (Feldman, Hinshaw, and Karlson, 1947), mentioned above, we have modified this conclusion, and in recent months we have been treating patients by giving the daily dose in a single injection or by dividing the total dose into two injections administered at intervals of twelve hours. The results seem to be equally satisfactory, and this has greatly simplified the clinical use of streptomycin. It remains to be determined whether these infrequent injections and lower doses will be adequate to produce and maintain remissions in such malignant forms of tuberculosis as tuberculous meningitis and miliary tuberculosis.

In previous publications we recommended that in treatment of tuberculous meningitis streptomycin be administered intrathecally as well as intramuscularly (Hinshaw, Feldman, and Pfuetze, 1946). Studies have not been completed to ascertain whether intrathecal injection alone or intramuscular injection alone may possibly suffice. In view of the severe reactions which have occasionally followed the intrathecal administration of streptomycin in doses of 100 to 200 mg., which we recommended previously, we have recently reduced the amount of streptomycin injected intrathecally to 25 to 50 mg. a day. It seems probable that such intrathecal injections every alternate day may suffice.

In the treatment of lesions of the larynx and tracheobronchial tree streptomycin administered by either aerosol or atomizer has often been employed in addition to intramuscular treatment. Recent observations make it seem possible that intramuscular administration of streptomycin alone is adequate for the treatment of these forms of the disease. In the treatment of tuberculous enteritis intramuscular administration of streptomycin is recommended, and it is doubtful if any advantage is gained by the addition of orally administered streptomycin. However, this phase of streptomycin therapy is worthy of further investigation.

Therapeutic Limitations of Streptomycin

Streptomycin, like all other substances of value in chemotherapy, has certain definite shortcomings or limitations.

Antibacterial Potency

Compared with other antagonistic agents effective against tubercle bacilli the antibacterial efficacy of streptomycin against tubercle bacilli is amazingly high. Yet, as was mentioned previously, the major influence of streptomycin on tubercle bacilli in tuberculous infections appears to be that of suppression of the normal pathogenic activities of the organisms. Sterilization of the infective process, even when observed, cannot be attributed to the direct antibacterial action of streptomycin alone. In many instances in clinical tuberculosis during the treatment with streptomycin a marked diminution and eventual disappearance of tubercle bacilli in sputum or other discharges may occur. However, the final elimination of tubercle bacilli from the infected tissues may be dependent only indirectly on the specific action of streptomycin. Most human beings are intrinsically capable of mobilizing mechanisms of resistance and repair which are effective in disposing of tubercle bacilli or inhibiting their aggressive action.

While it would be desirable in the treatment of tuberculosis to have a chemotherapeutic substance of such potency and safety that all tubercle bacilli could be eliminated from the infected host immediately or soon after the administration of a single dose of the drug, the probable results would still be inadequate. In other words, we should distinguish the specific antagonistic effect of the therapeutic substance on the bacterial parasites from the anatomical and purely mechanical factors that were created as a result of the infection. It is illogical to assume that a chemotherapeutic substance, no matter how potent and effective its antibacterial properties may be, can cause in some incredible manner the immediate and complete restoration of tissues that have been irreversibly damaged or destroyed as a consequence of the pathogenicity of the infective agents.

Toxicity*

Toxicity must also be considered as another of the limitations of streptomycin as a specific agent in tuberculosis. Like all other agents used in chemotherapy, streptomycin has certain toxic potentialities. However, compared with most other chemotherapeutic agents streptomycin has a reasonable margin of safety when the treatment of severe types of tuberculous diseases is considered. The most important toxic manifestation associated with streptomycin therapy in clinical tuberculosis is the unusual neurological reaction giving rise to dysfunction of the vestibular apparatus. Rarely, auditory function is impaired when large doses are given for prolonged periods or when impaired renal function interferes with the excretion of the drug. Other toxic reactions that have been noted include erythematous rash, fever, eosinophilia, and abnormal urinary sediments.

The toxic reaction to streptomycin referable to the eighth cranial nerve or its end-organs which results in a reduction of the vestibular function is the most serious and was one of the first evidences of toxicity described (Hinshaw and Feldman, 1945; Brown and Hinshaw, 1946; Fowler and Seligman, 1947). The incidence of occurrence of this untoward effect is rather high. At least 90% of patients receiving a daily dose of 2 g. of streptomycin for more than one month will exhibit symptoms of vestibular dysfunction. If the dose is reduced to 1 g. a day fewer than 30% of patients will experience any subjective symptoms or exhibit any objective signs of vestibular dysfunction. Fortunately in most cases the symptoms largely disappear within sixty to ninety days or longer after treatment has been stopped. The most severe symptoms of decreased vestibular function occur in patients receiving doses of 3 g. or more of streptomycin daily. Restoration of vestibular function or compensation phenomena occur more rapidly and more completely in children and young adults than in persons beyond the age of 50 (Hinshaw, Feldman, and Pfuetze, 1946).

While the possible toxic effects of streptomycin should be recognized and carefully considered, extensive clinical trials indicate that in cases of tuberculosis in which the prognosis is unfavourable or uncertain the possible toxic effects of streptomycin do not constitute a valid contraindication to its use (Hinshaw, 1947b). In cases of tuberculosis in which the prognosis is favourable under conventional forms of treatment streptomycin therapy should be used only in exceptional circumstances, if at all.

*A report on the toxicity of streptomycin in human beings has been given by McDermott (1947).

Streptomycin Resistance

One of the most serious obstacles to the achievement of maximal therapeutic benefits from streptomycin in clinical tuberculosis is the problem of streptomycin-resistant tubercle bacilli. Although the problem of drug-resistant microorganisms is not entirely understood there is evidence that this phenomenon represents a selective process dependent on the capacity of bacteria to undergo spontaneous variation or mutation (Demerec, quoted by Selbie, 1946).

In clinical tuberculosis, while the largest proportion of the bacterial population is sensitive to streptomycin before treatment is started, a few variants are present that are drug-resistant in varying degrees (Pyle, 1947). During treatment with a sufficiently potent antibacterial substance such as streptomycin the more sensitive bacterial cells are gradually inhibited and eventually eliminated, while the more resistant cells continue to be propagated. Eventually, if treatment is long continued, there frequently occurs a gradual replacement of the population of tubercle bacilli from one that was predominantly sensitive to streptomycin when treatment began to one that is predominantly streptomycin-resistant. The degree of resistance may be several thousandfold greater than is true of tubercle bacilli sensitive to streptomycin.

In clinical tuberculosis the exact significance of the appearance of varying percentages of streptomycin-resistant tubercle bacilli is somewhat uncertain at the present time. Evidence obtained by animal experimentation shows definitely that infections induced in guinea-pigs by apparently pure cultures of highly streptomycin-resistant strains of tubercle bacilli are not amenable to the therapeutic action of streptomycin (Feldman, Karlson, and Hinshaw—unpublished data; Youmans and Williston, 1946). However, clinically the occurrence after weeks of therapy of some tubercle bacilli highly resistant to streptomycin does not necessarily indicate that the preponderant bacterial population is resistant, and must not be accepted as an indication that treatment may be of no benefit if the need for treatment continues to exist. The fact that patients may continue to improve spontaneously after administration of streptomycin has been discontinued and eventually may become bacteriologically negative (by guinea-pig tests) for tubercle bacilli indicates that treatment may not be required for extended periods.

The time required for the appearance of streptomycin-resistant tubercle bacilli after the beginning of treatment with this substance is variable. Ordinarily, however, the drug-resistant bacteria cannot be demonstrated in appreciable numbers until treatment has been in effect sixty to ninety days. While it is desirable to obtain cultures for the purpose of bacteriological assays for the determination of streptomycin sensitivity* at regular intervals after treatment has been started, there is no adequate practical quantitative method of determining when resistant organisms have gained ascendancy. All available tests are only qualitative, and merely indicate that at least a few resistant bacilli are present. This must not be accepted as convincing proof that the end-point of practical treatment has been reached.

Whether or not the administration of streptomycin should be continued after the bacterial population has become predominantly drug-resistant is at the present time a controversial question. It is our opinion, however, that when the vast majority of bacterial cells are no longer susceptible to the antibacterial action of streptomycin further administration of the drug is unwarranted and may even be deleterious. If at a later time streptomycin-sensitive tubercle bacilli again predominate, and other indications are favourable, treatment with streptomycin may be resumed.

How best to meet the problem of streptomycin-resistant tubercle bacilli is at present one of the most important of

*A method for the determination of sensitivity of tubercle bacilli to streptomycin *in vitro* has been described by Karlson and his associates (1947).

the many unsolved problems that confront the experimentalist and the clinician. A logical approach would seem to be to use as the therapeutic regimen a combination of two or more drugs each having a high antagonistic efficacy for tubercle bacilli. Streptomycin utilized simultaneously with some other (as yet unknown) antibiotic might prove effective. Streptomycin combined with sulphone compounds or with other synthetic anti-tuberculosis drugs offers possibilities that are now being explored.

Final Comment

During recent years studies in the antibacterial attack on tuberculosis have yielded results sufficient to change to a considerable degree many of the previously held therapeutic concepts of tuberculosis. Most important, it has been adequately demonstrated that this disease is no longer beyond the range of specific drug therapy. Instead, the vulnerability of tuberculous infections to a chemotherapeutic attack has been established experimentally and clinically. While to date the completely ideal anti-tuberculosis drug has not been reported it seems probable that substances equal or superior in effectiveness to known agents may be found. These possibilities warrant expenditure of great effort, and this search may become one of the most important and exciting adventures in medical research.

In the meantime streptomycin seems likely to become generally accepted as a useful drug in certain types of clinical tuberculosis. It must, however, be used intelligently, with full recognition of its shortcomings and limitations. It should frequently be used in combination with other effective methods of treatment, rather than as a substitute for such proved therapeutic procedures as care in a sanatorium, collapse therapy, and surgery.

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CANCER OF THE STOMACH IN ADDISON'S ANAEMIA

BY

W. A. BOURNE, M.D., F.R.C.P.

(From the Royal Sussex County and Hove General Hospitals)

Among some clinicians there is a feeling that patients suffering from pernicious anaemia are more liable to gastric carcinoma than normal individuals of the same age groups. Kaplan and Rigler (1945) suggested that this feeling had statistical backing, and reported (Kaplan and Rigler, 1947) 18 cases of cancer and 17 simple tumours in 259 cases of pernicious anaemia. During the past two years 15 of my own cases have been observed by radiograph and gastroscopy in the hope of detecting carcinoma of the stomach at an early stage. Occasional estimations of the blood sedimentation rate have also been made, since Whitby and Britton (1946) state that the test is of great value in suggesting the onset of carcinoma. Cases were not selected, and there can be no pretence that they form a series. These observations have resulted in the discovery of three cases of carcinoma in patients free from symptoms and clinical signs: one was certainly operable and one probably operable when first detected. One further case has been found to have a leiomyoma. Two others are under particular observation because of a persistently high blood sedimentation rate; one of these has a nodule of uncertain nature in the pyloric antrum.

The cases observed are here tabulated. The total is made up of 11 females and 4 males. Radiological examination consisted of a barium swallow, fluoroscopy, and, usually, a film. Gastroscopy was performed with the Hermon Taylor or Schindler instrument if the radiological report was doubtful, if there was failure to improve clinically, and once when there was a persistently high sedimentation rate in the absence of abnormal radiological findings. The sedimentation rate was determined by Wintrobe's method corrected for anaemia, and was asked for quite at random. It must be emphasized that no patient had dyspepsia when examined.

Case No.	Sex	Age	Duration of Anaemia	*X*-ray Film	Gastroscopy	E.S.R.	Conclusion
1	F	41	3	Normal	—	—	—
2	F	41	7	,,	—	20	—
3	F	47	2	,,	—	1	—
4	F	49	4	,,	Normal	40	—
5	F	50	11	,,	—	—	—
6	M	52	1	,,	—	—	—
7	F	55	11	,,	—	26	—
8	F	60	4	,,	Polyp	—	Leiomyoma
9	M	65	10	Abnormal antrum	Abnormal antrum	—	Carcinoma
10	F	70	13	Normal	—	—	—
11	M	70	13	Abnormal antrum	Carcinoma	—	Carcinoma
12	F	73	6	Normal	—	—	—
13	F	75	2	,,	—	—	—
14	F	75	12	Abnormal antrum	Abnormal angulus	—	Carcinoma
15	M	77	1	Normal	Nodule in antrum	30	Solitary polyp

Case 9

A retired jockey aged 65 was diagnosed as suffering from pernicious anaemia in Berlin in 1937, and had been on liver treatment with satisfactory results thereafter. Though asymptomatic he was *x*-rayed on Sept. 18, 1945, and the report stated: "There is some rigidity in the prepyloric region which is somewhat suggestive of early scirrhous carcinoma, but it may be due only to fibrosis. If other signs are equivocal, a repeat examination in a few weeks' time would be advisable for comparison." Gastroscopy on Oct. 31 showed that the lower third of the stomach was fixed and pale, with no peristalsis. Laparotomy was performed on Feb. 27, 1946. At this time he

was feeling fit, was putting on weight, had a good appetite with no abnormal symptoms, and nothing abnormal was found on clinical examination. A blood count showed : Hb, 98% ; red cells, 5,050,000 ; colour index, 0.97 ; white cells, 6,500 (polymorphs 84%, lymphocytes 14%, monocytes 1%, eosinophils 1%) ; red cells normal.

At operation there was no evidence of neoplasm, though the stomach was not opened. He continued on liver therapy as before until, in March, 1947, he gave a four-weeks history of constant abdominal pain, worse after meals, and relieved by immediate vomiting of undigested food. During this four weeks his appetite had failed, he had lost 10 lb. (4.5 kg.) in weight, and the bowels were opened regularly. There was no paraesthesia. Clinically he was wasted, with a smooth tongue and flat nails. There was no abdominal tumour or lymph-node enlargement. The blood count showed : Hb, 64% ; red cells, 3,400,000 ; white cells, 9,700 ; colour index, 0.94 ; the red cells showed a little anisocytosis and no evident macrocytosis. A test of occult blood in stools was positive. An alcohol test meal showed no free HCl, no blood or bile, and no lactic acid. *X*-ray report stated : "There are huge irregular filling defects in the pyloric portion of the stomach, indicating the presence of a large tumour mass encroaching on the lumen of the stomach." Laparotomy on April 9 revealed a large carcinoma of the pyloric end of the stomach ; glands in pyloric region, portal region, and fissure much enlarged. Post-colic jejunostomy was performed. The patient died on April 22.

Comment.—It seems very probable that when first operated on this patient, with radiological and gastroscopic abnormality in the lower third of the stomach, had early carcinomatous change, not detectable surgically. This did not show itself clinically for eighteen months, when, after only a month's symptoms, the diagnosis was certain. Achlorhydria and length of history render the diagnosis of pernicious anaemia probable. Surgical evidence confirms the radiological and gastroscopic impression that the original lesion was in the pyloric region.

Case 14

A housewife aged 75 had been treated for pernicious anaemia for twelve years with monthly liver injections. In May, 1947, she was admitted to hospital with a three-months history of vomiting three or four times daily at no special time, but occasionally after meals. Nausea and retching were frequent, with production of green bile. There was a non-localized gnawing feeling in the abdomen, but no true abdominal pain. One recent diarrhoeic attack occurred lasting 24 hours. She gave a long-standing history of piles with occasional bleeding, and of a productive cough with dyspnoea. She had recently lost some weight and had tended to constipation. There was no family history of anaemia. Clinically, the tongue was smooth, cracked, and shiny, the conjunctivae pale. Nothing significant was found except transient hypertension and crepitations at both lung bases. The abdomen appeared normal and there were no enlarged lymph nodes. Urinary culture was sterile, and the stools were negative for occult blood. A blood count on May 3 showed : red cells, 2,710,000 ; Hb, 60% ; colour index, 1.1 ; red cells showed marked anisocytosis with macrocytes, microcytes, poikilocytes, an occasional diffuse polychromasic cell, and an occasional cell showing punctate basophilia ; white cells, 3,400 (polymorphs 60%, lymphocytes 38%, monocytes 2%).

Intensive liver therapy was started on May 9, when the blood count showed : red cells, 2,550,000 ; Hb, 60% ; colour index, 1.2 ; white cells, 5,400 ; reticulocytes, 1.5%. On May 15 the blood count was : red cells, 3,670,000 ; Hb, 70% ; colour index, 0.97 ; white cells, 9,800 ; reticulocytes, 9.5%. On May 22 it was : red cells, 4,600,000 ; Hb, 90% ; colour index, 0.98 ; white cells, 7,700 ; reticulocytes, 2.5%. A histamine test meal revealed complete achlorhydria ; the blood Wassermann reaction was negative.

X-ray reports were as follows:—May 9 : "There is some increased opacity at the right lung base"; May 15 (opaque meal) ; "Stomach is rather small, shows normal tone ; peristalsis somewhat diminished ; mucosal pattern normal. Pyloric antrum appears to be narrowed, but peristaltic waves pass through this portion and it is distensible. No evidence of gastric ulcer. Duodenal cap is large, fills out readily, has a normal contour, and is neither tender nor spastic. No evidence of duodenal ulcer."

Gastroscopy revealed small reddish nodular protuberances at the angulus ; antral peristalsis and pyloric closure active. Impression, neoplasm.

At laparotomy on May 27 the surgeon was induced to perform a not very extensive resection of the lower third of the stomach. On opening this a nodular area was seen on the mucosa of the stomach on the lesser curve near to the pylorus, not adherent to the outer coats.

Pathological report by Dr. L. R. Janes.—"The suspicious plaque in the stomach wall shows an adenomatoid appearance of the mucosa with increase in the number of the glands and hyperchromatism of the cells. The cellular arrangement in the gland acini is everywhere regular save at one point where, in a single acinus, there is a de-differentiation of epithelium, the cells of which cannot be identified as gastric epithelium. ? Earliest possible malignant change. The muscularis mucosae is prominent and intact."

The patient was discharged on June 27, and is progressing well.

Comment.—The radiological appearances resembled those in Case 9. Gastroscopically, the angulus was clearly abnormal. Histologically, the thin mucosa, with definite superficial intestinal heterotopia, thickens, Prof. Stewart comments, to about five times its depth, with hyperchromatic vegetative epithelium, no doubt proliferating actively. This appearance is probably precancerous, and in a single acinus Dr. Janes now recognizes genuine early carcinomatous de-differentiation. The general picture much resembles appearances described by Waldeyer (1867) at the site of origin of gastric cancers, when, by serial sections, he first clearly showed their origin in the mucosa and not in connective tissues ; and is similar to the areas of malignant degeneration in intestinal polyps (Saint, 1927) and to the non-invasive *carcinoma in situ* of the pars pylorica described by Mallory (1940). I feel strongly that it would have been most dangerous to leave the stomach unoperated and that the history of Case 9 would have been repeated. The case must be regarded as one of cancer, and if there is retrospective criticism it is, as Prof. Hardy has said, that the excision was not wide enough.

Case 11

A violinist and violin maker aged 70 was diagnosed as suffering from pernicious anaemia at Middlesex Hospital in 1934 and has been treated continuously since. On May 30, 1947, he was in good health. An opaque meal showed a pyloric antrum somewhat narrowed, but peristaltic waves passed through this region, which is against the presence of malignant neoplasm. Otherwise, nothing abnormal was discovered in stomach or duodenum, though the stomach is small and empties rapidly.

Gastroscopy on June 25 revealed some difficulty in passing the cardia, but nothing abnormal seen in this area. The angulus appeared irregularly nodular and the pylorus indurated and closing irregularly. On Aug. 24 he was admitted for laparotomy, symptom-free. A blood count showed : red cells, 4,970,000 ; Hb, 94% ; colour index, 0.95 ; Wassermann reaction negative. On the night before operation he developed right-sided pneumonia. A radiograph on Oct. 7 showed lung fields clear except for thickened interlobar septum. Laparotomy on Oct. 8 revealed a large hard malignant ulcer of the antrum invading the peritoneum, with secondary growths in liver, glands of portal fissure, and pelvic peritoneum.

Comment.—This case was an advanced but asymptomatic carcinoma, which might have been detected if *x*-ray examination had been carried out earlier. The diagnosis of pernicious anaemia made at the Middlesex Hospital is accepted, and appears to be confirmed by the length of history. Radiologically, antral change was more advanced

than in the two earlier cases, but of the same type; and surgically only the lower third of the stomach was involved. Gastroscopy left little doubt of the diagnosis, but, as in some of these cases, infiltration at the angulus probably imitated the pylorus closely.

Other Cases

Case 8 was that of a woman of 60 with a four-year history of anaemia needing continued intensive liver therapy. She was found at operation to have a small stomach, only 2 to 3 in. (5 to 7.5 cm.) in diameter, with a dumbbell-shaped tumour in the fundus; this was removed with difficulty, and consisted of a benign leiomyoma. *Case 15* is that of a man of 77 with a one-year history who has a sedimentation rate, repeated at several months' interval, of 30 mm.: normal for the method, 0–10 mm. only. *X*-ray examination showed a normal stomach, but gastroscopy revealed a reddish nodule on the greater curve of an otherwise (gastroscopically) normal pyloric antrum. This patient is still under observation, though unsuitable for operation without stronger reason.

These cases illustrate the recognized liability of patients with pernicious anaemia to gastric abnormality, and the desirability of watching them from this point of view.

Discussion

The limitations of this investigation are recognized. Swayed by the weight of others' experience (Wilkinson, 1945) and by the apparently negative result of the first case, observations have been more casual than now seems desirable. The results justify further observation. Investigation in these cases is not difficult: the patients are generally placid and co-operative, their stomachs are easy to examine radiologically (Rigler, Kaplan, and Fink, 1945) and gastroscopically, and they tolerate operation well even in the eighth decade.

Of 15 patients examined for gastric lesions while free from dyspepsia, carcinoma has been found in three. In these cases the carcinomatous area was in the lower third, where radiology demonstrated narrowing even in the two cases which were at a very early stage. There seems to be no pathological reason for this general contraction of the pyloric area, though it may be the first indication of carcinomatous change. On the other hand, it may be a permanent characteristic of these stomachs. It was not productive of delay, and is not mentioned by Jacobson and Palmer (1943) in a radiological study of gastric emptying in pernicious anaemia. The lower stomach is not usually abnormal in pernicious anaemia (Magnus and Ungley, 1938), and gastroscopy confirms this. An abnormal antral mucosa, especially when associated with a narrow antral canal, may predispose to malignancy. It is well recognized that the prepyloric area is particularly liable to develop cancer. Cases of pernicious anaemia showing an abnormal mucosa there should be viewed with as much suspicion as hyperchlorhydric cases with prepyloric ulcers. There is reason to believe, also, that simple neoplasms of the stomach are unduly frequent in pernicious anaemia. Carcinoma originating in these may appear in any gastric area, and is characteristically a bulky polypoid tumour. No such case has been found in the small number now reported, though I have records of other casual ones.

Conceivably, therefore, in pernicious anaemia carcinoma may arise in two ways. It is suggested as a basis for further full observation that the commoner prepyloric carcinoma does not arise in localized polyposis but is associated with rather diffuse mucosal changes detectable by gastroscopy at an early stage, and with narrowing of the prepyloric area demonstrable radiologically.

The patients developing carcinoma were all over the age of 65, and had been treated for ten years or more. With increasing age abnormal stomachs would be expected to become more liable to malignant change; and liver treatment, by keeping patients alive, may predispose to this form of cancer—if liver extract is not a carcinogen (Kaplan and Rigler, 1947).

The cases observed indicate once again how late in the course of gastric cancer symptoms appear. If, however, these cases are operated on early, then, as Mallory (1940) remarks of early gastrectomy for other prepyloric lesions, histological appearances are not infrequently doubtful. To cure more cancers we must alter our pathological, radiological, and gastroscopic criteria so as to present our histologists with precisely this problem. Kaplan and Rigler (1947) urge that watching cases of pernicious anaemia is the main method of achieving this object obvious at the moment, few as such cases are.

Summary

Examination of 15 symptom-free pernicious-anaemia patients revealed cancer in three. Periodical *x*-ray and gastroscopic studies are strongly indicated in all cases of Addison's anaemia in remission or relapse.

I am grateful to my hospital colleagues, especially to Dr. L. R. Janes, for much help and restraining criticism. I am indebted to Prof. T. L. Hardy for encouragement and advice, and to Prof. M. J Stewart for comments on the histology of Case 2.

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THE COMPLICATIONS OF MUMPS

BY

DESMOND LAURENCE, M.B., M.R.C.P.
Late Major, N.Z.M.C.

AND

DONALD McGAVIN, M.Ch., F.R.C.S.
Late Major, N.Z.M.C.

Officers Commanding Medical and Surgical Divisions, 6 New Zealand General Hospital, Japan

In 1946 a few cases of mumps occurred in a military camp in New Zealand just before the departure of a contingent of about 2,000 soldiers for Japan. A number of cases occurred on the ship during the journey, and after the arrival of the force in Japan the disease spread rapidly, giving rise to a sharp epidemic of 235 cases in seven months. It has since been possible to follow up 208 of these cases and to examine and to interrogate them. This paper embodies the result of the investigation, which was of particular interest so far as the complications of the disease and their permanent after-effects are concerned. Of the 208 patients 189 were white men, 14 were Maoris, and 5 were white women. There was no difference in the course of the disease in the Maoris except that they did not report sick until much later in the illness. Except where specially mentioned the figures refer to the 203 men, whose average age was 22 years, the women being considered separately.

We believe the value of this investigation lies largely in the fact that such a complete follow-up was possible so long

after the illness, and that any residual disabilities may be considered unlikely to improve further. The average time of follow-up was seven months after the onset, but in individual cases it varied from four to eleven months. Each patient was interviewed, and so far as possible his notes were studied simultaneously.

The commonest mode of onset of the illness was the appearance of parotid enlargement. However, in 54 cases the onset was with general symptoms (tiredness, malaise, headache, etc.), which were present for up to two days before any glandular enlargement. Enlargement of the submandibular glands alone occurred in 13 cases. Orchitis was the only manifestation of mumps in five cases.

Nervous Complications

At the follow-up each patient in the series was directly interrogated for these symptoms: headache, neck stiffness, drowsiness, facial weakness, disturbances of hearing, and acroparaesthesiae. The statements were noted and compared with the case records written at the time of illness.

There had been symptoms or signs of meningeal involvement in 60 cases: 18 patients complained of moderate headache only, and this single symptom is of rather doubtful significance as no lumbar punctures were performed; 36 complained of severe headache and, in addition to marked pain, were drowsy and had a positive Kernig sign or neck rigidity; and six showed a definite meningo-encephalitis, these being recorded below. One man complained of deafness and vertigo, and two men had vague aural symptoms on one side during the early stages of the illness.

Unfortunately, owing to the size of the epidemic and the limited facilities available at the time, lumbar puncture was not performed in some cases in which the results would have been interesting and probably abnormal. Where performed the findings are recorded with the individual cases.

Case Histories

Case 1.—A. J. S., aged 21, noticed the onset of throbbing retro-orbital headache with slight sore throat and swelling below the right ear on Aug. 19, 1946. The swelling increased until the 21st, when he was admitted to 6 N.Z.G.H. He was found to have tender swelling of both parotid glands, more marked on the right, and a small non-tender swelling of the left submandibular gland. By Aug. 25 both submandibular glands had become grossly swollen and tender. Next morning he complained of swelling and pain in the left testicle, and was found to have a well-developed epididymo-orchitis. At 7 p.m. on the same day he complained of frontal headache, drowsiness, nausea, and photophobia. His temperature, which had varied between 98.4 and 100° F. (36.9 and 37.8° C.) rose to 105° F. (40.6° C.) at 10 p.m. Flexion of the neck caused pain in the lumbar region, but no other abnormality was found. On Aug. 27 he felt better but was still drowsy, and he vomited all food and drink. Neck rigidity was still present and Kernig's sign was positive. The enlarged salivary glands were subsiding. The same evening he became more drowsy and disorientated. On examination marked weakness was found in both legs, right more than left, absent knee- and ankle-jerks, and extensor plantar responses. Cerebrospinal fluid examined on the 28th contained 30 mg. of protein per 100 ml. and 4 lymphocytes per c.mm. By Sept. 3 he felt quite well and was symptom-free, although examination of his nervous system revealed a marked right-upper-motor-neurone facial weakness, weakness and incoordination of right arm and leg, with normal tendon reflexes and an extensor plantar response on the right. Appreciation of light touch, pain, and temperature was impaired on the right side of the face and body. Position sense was impaired in the right hand. After convalescing for a further two weeks he returned to his unit, where he began to suffer from "dizzy attacks and blackouts." These at first occurred at any time of day when up and about, but by the end of the year they occurred only if he stood at attention for any length of time. His symptoms were immediately relieved by sitting or by lying down. When examined at this time he still had obvious facial weakness, with slight weakness of grip in the right hand and of dorsiflexion of the right wrist. There was slight sensory impairment to light touch, pain, and temperature over the right face, chest, and arm. The right leg was normal, with a flexor plantar response. The left testicle was slightly smaller than the right. After a month's physical training at a convalescent camp his fainting attacks ceased. Eight months later the patient was completely normal apart from a still apparent facial weakness.

Case 2.—G. H. M., aged 22, was admitted to 6 N.Z.G.H. on July 5, 1946, complaining of a sore throat and swelling under the right jaw for 18 hours. Frontal headache and flitting limb pains had been present for eight hours. Examination revealed a swollen right submandibular gland, marked neck rigidity, and a positive Kernig sign. There was slight weakness of the right arm and leg, with normal tendon reflexes and an extensor plantar response on the right. Temperature was 103° F. (39.4° C.). That evening he became very restless and complained of aching pains all over his body; his headache was worse. The weakness of his right arm and leg became more marked and a left facial paresis developed. Lumbar puncture gave a slightly turbid fluid containing 680 cells per c.mm. (97% lymphocytes, 3% polymorphs); total protein, 100 mg. per 100 ml.; Pandy's reaction positive; chlorides, 659 mg. per 100 ml.; 13,700 white cells per c.mm. (79% polymorphs, 9% lymphocytes, 12% monocytes). On July 8 the patient felt much better, but still had slight neck rigidity. The right hemiparesis and left facial weakness had not improved. On the 10th the left parotid gland became swollen, but his general and neurological condition had improved. He made a rapid recovery and was discharged to his unit, with no abnormal physical signs after four weeks in hospital. When seen 11 months later he had no complaints, and his nervous system was normal except for a mild left facial weakness.

Case 3.—F. B. C., aged 20, developed a frontal headache and bilateral parotid and submandibular enlargement on Aug. 22, 1946. On Sept. 3 he developed bilateral orchitis. Two days later he complained of frontal and occipital headache and his temperature rose to 103° F. (39.4° C.). Kernig's sign was positive. Next day the headache was more severe, with photophobia and neck rigidity, and he had diplopia on looking upwards. No definite ocular muscle paresis could be detected clinically. White blood cells numbered 6,600 cells per c.mm. (60% polymorphs, 36% lymphocytes, 4% monocytes). The diplopia lasted seven days. On Sept. 17 he went to a convalescent camp, where he continued to complain of dull frontal headaches. These continued intermittently for five months, although they may have been partly due to an infected maxillary sinus for which he was being treated.

Case 4.—R. H., aged 22, was admitted to 6 N.Z.G.H. on Aug. 29, 1946, with an enlarged right parotid gland. Next day he complained of malaise, severe frontal headache, and nausea, and he vomited several times. The temperature was 102° F., (38.9° C.). On Sept. 3 he was still vomiting; the temperature was 103° F., Kernig's sign was positive, and the knee-jerks were absent. Marked neck stiffness developed during the course of the day. Lumbar puncture gave a slightly turbid fluid containing 700 cells per c.mm. (95% polymorphs, 5% lymphocytes); total protein, 60 mg. per 100 ml. On the 5th he felt better (temperature 102° F.), and there was slight weakness of flexion of the right hip, knee, and ankle. Knee-jerks were still absent. White blood cells numbered 5,200 per c.mm. (42% polymorphs, 52% lymphocytes, 4% monocytes, 2% eosinophils). His pulse rate fell below 50 on the 14th and 18th days of illness. By Sept. 24 he was quite well and there were no abnormal signs in his nervous system.

Case 5.—A. J. M., age 22, was admitted to 6 N.Z.G.H. on Feb. 18, 1947, complaining of headache and shivering, with pain in the right hypochondrium and nausea for eight hours. Examination revealed tenderness and rigidity in the right hypochondrium and tenderness in the right loin. The psoas sign was positive on the right. Next day he was drowsy

and developed photophobia, slight neck rigidity, and tenderness in the right iliac fossa. On Feb. 20 the left parotid gland became swollen. Lumbar puncture showed: C.S.F. pressure of 160 mm.; 545 cells per c.mm. (99% lymphocytes, 1% polymorphs); total protein, 70 mg. per 100 ml. Pandy's test was positive and urinary diastase normal. There were no abnormal physical signs in the nervous system except a positive Kernig sign and neck rigidity. His headaches ceased gradually over a period of about a month. On Feb. 27 the C.S.F. contained 220 cells per c.mm. (99% lymphocytes, 1% polymorphs); total protein, 50 mg. per 100 ml. Pandy's test was negative. On March 7 he complained of epigastric discomfort after food, and on the 10th the C.S.F. contained 62 cells per c.mm. (all lymphocytes); total protein, 40 mg. per 100 ml. On March 25 a small area of pulmonary collapse developed at the left base, with hilar gland enlargement. This cleared up completely after two weeks, and he was symptomless throughout. The indigestion persisted for several weeks in spite of treatment; it was considered to be largely psychological in origin. Several examinations for urinary diastase gave normal figures. When last seen ten weeks after leaving hospital the patient was quite fit.

Case 6.—J. A. G., aged 21, was admitted to 6 N.Z.G.H. on Sept. 9, 1946, complaining of malaise. The following day both parotid glands became slightly enlarged. On Sept. 12 he developed a right-sided orchitis and next day he complained of severe headache and vomited. On Sept. 15 his speech was slurred and there was marked neck rigidity. Kernig's sign was positive. On the 17th he developed a left facial paresis; there was weakness of his right leg, with normal tendon reflexes and bilateral extensor plantar responses. On the following day the plantar responses became flexor, but his condition was otherwise stationary. The cerebrospinal fluid was slightly turbid and contained 420 cells per c.mm. (98% lymphocytes, 2% polymorphs); total protein, 90 mg. per 100 ml.; Pandy's test positive. By Sept. 30 he had completely recovered except for a slight left-upper-motor-neurone facial paresis. In February, 1947, he had an attack of measles with severe headache. Lumbar puncture performed when the rash was fading (sixth day) showed that the C.S.F. contained 33 cells per c.mm. (32 lymphocytes, 1 polymorph); total protein, 40 mg. per 100 ml. Pandy's test was negative. White blood cells numbered 9,150 (64% polymorphs, 32% lymphocytes, 4% monocytes). There were no physical signs in the nervous system except for the slight left facial paresis, a relic of his previous illness.

Case 7.—F. H. G., a woman aged 27, was admitted to 6 N.Z.G.H. on Sept. 7, 1946, complaining of headache and malaise; there was bilateral parotid swelling, more marked on the left. On the second day she developed a dull peri-umbilical pain with tenderness. Next day the headache became worse and she became drowsy; slight neck rigidity was present. On the ninth day a right facial paresis developed. There was mild bilateral mastitis during the illness. She was discharged fit after three weeks, although the facial weakness was still obvious. At the follow-up seven months later there was still a trace of facial weakness, and the patient complained that she had had amenorrhoea since the illness.

Case 8.—C. O. N., aged 26, developed bilateral parotitis on June 6, 1946. Next day he noticed a slight degree of deafness in the left ear, which became severe during the next 24 hours. There was also vertigo. At the follow-up nine months later he was found to have a pronounced degree of nerve deafness in the left ear.

Discussion

The literature on the nervous complications of mumps is adequately reviewed by Lightwood (1946), Church (1946), and Holden *et al.* (1946). The incidence is reported in various studies as varying from *nil* to 40%. Meningitis is undoubtedly the most frequent manifestation of nervous involvement in mumps, in addition to which numerous neurological syndromes have been recorded less commonly—generalized meningo-encephalitis with or without fits, dysphasia, monoplegia, hemiplegia, tetraplegia, cranial-nerve palsies (particularly 3, 7, and 8, acoustic and vestibular divisions), optic neuritis, bulbar palsy, involuntary movements, and myelitis. From all of these complete recovery is usual, and consequently pathological studies are few. Demyelination of the corona radiata and encephalitic patches in the cerebral cortex and brain stem have been observed. The changes in the C.S.F. have been recorded often and at length, and are well known.

The nervous symptoms and signs are generally said to have their onset at the height of the illness, usually before the development of orchitis. In the eight cases recorded above the onset ranged from one in which the patient reported sick with nervous involvement and possible pancreatitis (Case 5) to one in which there was no nervous involvement (unless the early headache is regarded as such) until the 14th day (Case 3). The average day of onset was the fifth. In most of the cases recorded above it was not possible to localize the encephalitis to a single site, which is what would be expected in this type of disease. Case 1 presented a rather mixed picture, which could be accounted for by bilateral involvement of the corona radiata, more marked on the left. During convalescence the picture of an uncrossed hemiparesis, most pronounced in the face and arms and less severe in the leg, with sensory change over the upper part of the body, supports a subcortical localization, although affection of the brain stem could also account for it.

Case 2 showed a crossed hemiparesis (left face and right limbs), which is most likely to be due to a brain-stem lesion. Case 6 was of considerable interest in that the patient had an abnormal C.S.F. during an attack of measles five months later. It is not known whether the fluid was normal in the interval, but usually it fairly rapidly becomes so after mumps encephalitis, and it would therefore seem that this man is constitutionally susceptible to potentially neurotropic viruses or that this susceptibility dates from and is due to the mumps encephalitis. Case 8 showed involvement of both the acoustic and the vestibular portions of the eighth nerve. Recovery from the facial weakness in Cases 1, 2, 6, and 7 was still incomplete at the follow-up, and it seems more likely that some permanent damage has been done. Apart from this and the vasomotor instability of Case 1 and the deafness of Case 8, all recoveries from nervous involvement were fairly rapid and complete.

Orchitis

Orchitis occurred in 53 (26%) men—in 17 cases while still confined to bed, in 5 at onset, in 6 before reporting sick, and in 21 after starting to get up. For the remaining 4 no information was available. The follow-up period was four months in two cases, five months in one case, and between six and ten months for the remainder. The onset occurred during the first week in 34 cases and during the second week in 16. One case developed on the 15th day and two cases on the 22nd day. The disease was bilateral in five patients. Orchitis was the first definite sign in five cases, appearing on the second or third day after a prodromal stage of lassitude and anorexia. In four of these the orchitis was the only clear manifestation of the disease, there being no subsequent parotitis.

In the follow-up 31 cases (57%) were perfectly normal. There was no testicular atrophy, the consistency and the sensation of the testes were unaltered, and sexual activity was unimpaired. In four cases there was or had been some residual pain after exercise, mild in all cases and usually transitory. In two the aching still occurred seven months after onset, and was associated with some degree of atrophy. In the other two there was no atrophy; one man's discomfort had ceased three to four months after onset, while the other's was improving at ten months.

Assessment of atrophy was based mainly on a difference of more than 1/4 in. (0.6 cm.) between the length of the two testes. This criterion is open to certain objections, including some degree of difference between the two sides in healthy people. It was applied only when the unaffected side appeared to be well developed and healthy. In none of the bilateral cases was there any reason to suspect any degree of atrophy. The patients' observations were invited in each case as a rough check. There was no case of complete atrophy in the series. Some degree of difference between the healthy and the affected sides was noticed in 22 cases (42% of those with orchitis), amounting to 1/2 in. (1.25 cm.) in 3 men, 3/4 in. (1.9 cm.) in 10, 1 in. (2.5 cm.) in 7, and 1¼ in. (3.2 cm.) in 2. Of these 22 testes 4 were softer than on the healthy side. Testicular sensation was normal in all. A decrease in size after the orchitis had been noticed by 13 patients, no change had been observed by 2, while the remaining 7 had no observations.

Sexual activity, as judged by intercourse, masturbation, or nocturnal emission, was unimpaired throughout the whole orchitis series. It remained unaltered in one man whose other testicle was completely atrophied from a preceding and independent cause ; no atrophy of the remaining testis followed the mumps orchitis.

One patient had had an attack of mumps two years earlier, with orchitis on the san side in each attack. By contrast, another man had had orchitis with mumps five years earlier without developing orchitis in his second attack.

Considering the absence of complete atrophy in the series, the fact that 1 in. or more of atrophy occurred in only nine cases and that there was a lack of any impairment of sexual activity, it is doubtful if we are justified in recommending a decompression operation in all cases of mumps orchitis. It might perhaps be advised for those with orchitis of a single functioning testicle or for those with severe bilateral orchitis, though the present small series would hardly justify the latter indication ; but for the remainder it is not indicated in the present state of our knowledge.

Other Complications

Pancreatitis and Mastitis.—Some degree of pancreatitis was considered to be present in 16 (8%) of the complete series. Symptoms lasted from one to five days. No sugar was found in the urine of 11 cases tested at follow-up, nor were there any sequelae. One woman complained of tenderness of the breasts during the early part of the illness, and one man had vague fleeting pains round his nipples soon after the onset of mumps.

Cardiovascular System.—Myocarditis has been reported in mumps, and Rosenberg (1945) undertook a full electrocardiographic study, in which he obtained abnormal records in 15% of cases. Although no thorough investigation could be carried out in this epidemic it was thought that it might be of interest to note the number of patients in whom the pulse rate fell below 50. Only 131 pulse charts were available, and 52 showed readings of less than 50 for varying periods, chiefly in the second and third weeks. One of these cases also had an apical systolic murmur which was still present at the follow-up. There were five cases of apical systolic murmur without bradycardia: in only one of these had the murmur disappeared at the follow-up several months later. It is not proposed to attempt to draw any conclusions, as there are obviously insufficient data, but these results seem to confirm the opinion that the cardiovascular system deserves more attention in cases of mumps than it has hitherto received.

Relapse and Second Attack.—Two cases relapsed with recurrence of glandular enlargement after discharge from hospital. A third patient relapsed with submandibular sialo-adenitis after an initial orchitis. Eighteen men gave a definite history of a previous attack of mumps and six thought they had probably had mumps before but were not certain.

There were no cases of urethral discharge, pericarditis, arthritis, nephritis, or suppuration of glands, all of which have been recorded as complications of mumps.

Complications in Women.—In one case the disease started with diarrhoea and vomiting, and the patient had amenorrhoea for six months afterwards and felt generally run-down. A second case (No. 7) showed evidence of mild meningo-encephalitis and mastitis. The remaining three cases complained spontaneously of tiredness since the illness—a complaint which was not made by any of the men.

Summary

An epidemic of mumps was investigated with the view of determining the incidence of complications and any permanent after-effects resulting from them. Eight cases of meningo-encephalitis are described. It was found that recovery tended to be slow and that when facial palsy occurred recovery was incomplete.

The incidence of orchitis was 26%. There were no cases of complete testicular atrophy following this complication, but 42% showed minor degrees of atrophy. Sexual activity was unimpaired.

We thank Col. C. R. Burns, senior medical officer of 2 N.Z.E.F. (Japan), for encouragement and permission to carry out this study, and also the regimental medical officers of the units concerned for their help in collecting the men for the follow-up examinations.

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FATAL AIR EMBOLISM DURING MASTECTOMY

BY

C. LANGTON HEWER, M.B., M.R.C.P., D.A.
Senior Anaesthetist, St. Bartholomew's Hospital

AND

HERBERT I. COOMBS, M.A., Ph.D., M.D.
Sector Pathologist

Air embolism may be associated with a large number of conditions. The circumstances in which it most frequently occurs are as follows: (1) Gynaecological and obstetrical (often criminal) procedures involving the manipulation of the pregnant or puerperal uterus. Many deaths have been recorded after insufflation of the vagina during pregnancy or the puerperium, and death has even occurred following insufflation of the Fallopian tubes. Placenta praevia is also an especially dangerous condition. (2) Intentional introduction of air or other gas into cavities or potential cavities such as the bladder, joint cavities, paranasal sinuses, and peritoneal and pleural cavities. Perirenal insufflation has given rise to air embolism. (3) Unintentional introduction of air into vessels during transfusions or infusions or into solid organs such as the liver. (4) Operative procedures to the breast, thyroid, lungs, etc. Air embolism may follow injury to vessels by stab wounds, bullet wounds, etc.

The effects of air embolism are very variable in severity, depending mainly on the condition of the patient, the

amount of air entering the circulation, and especially on the rate of access to the circulation. Symptoms may be absent or they may be slight and transitory. On the other hand, death may supervene, and this may be rapid or delayed. A rapidly fatal case which occurred during mastectomy is here described.

Case Report

The patient was a healthy-looking woman of 52 who had a fairly advanced carcinoma of the right breast. At the age of 37 her heart had been examined and it was suggested that she might have a lesion of the aortic valve, but she had remained in good health since that time. On examination the day before the operation no abnormal physical signs could be found in the heart.

A radical mastectomy was performed under general anaesthesia, induction being by intravenous thiopentone and maintenance by nitrous-oxide–oxygen in a closed circuit. A small amount of ether was added during the first ten minutes. The operation and anaesthesia proceeded without incident until the breast had been removed and glands were being dissected out from the axilla. Some haemorrhage took place from the axillary vein, and a few minutes elapsed before a ligature was passed round the vein and tied. At the moment of ligation the patient gave a sharp inspiration and stopped breathing. Simultaneously the colour became grey and the pulse imperceptible. The breathing circuit was at once emptied and refilled with oxygen, and after four or five compressions of the rebreathing bag spontaneous respiration started, the colour became pink, and the pulse returned, although it was poor in volume. The operation was finished with the patient breathing pure oxygen. An intravenous injection of 20 mg. of "methedrine" did not improve the pulse.

As dressings were being applied the colour again faded and the pulse and respiration ceased. Right auricular puncture at first showed a few twitches at the end of the needle, but these soon ceased. Cardiac massage also produced no response, and after about twenty minutes resuscitation was abandoned.

The cause of death was at first thought to be primary cardiac failure, but on further reflection this theory was found to be untenable. The conditions known to predispose to this event were not present. No drug or combination of drugs likely to produce cardiac failure had been given and no reflex stimulation had occurred. Furthermore, cardiac stimulation and massage, although carried out promptly, produced no response. Secondary cardiac failure from advanced operative shock was inadmissible, as the condition of the patient immediately preceding the first collapse was perfectly satisfactory. An acute circulatory crisis seemed to offer the most reasonable explanation of death. Coronary thrombosis appeared unlikely, and some form of gross embolism as the cause of death was arrived at by a process of exclusion. Air embolism seemed a distinct possibility, as venous bleeding had occurred immediately before the collapse, although it was not severe and no sucking had been heard. On the other hand, the right shoulder had been slightly raised on a sand-bag, and under these circumstances there is usually a negative pressure in the axillary vein during inspiration.

Post-Mortem Examination

Death occurred at 4.45 p.m., and a post-mortem examination was begun next day at 10 a.m. The essential findings were as follows.

No evidence of putrefactive change was found. As air embolism was considered as a possible cause of death the front of the thoracic cage was very carefully removed. The heart was seen to be distended on the right side, and on elevating the apex with the fingers the coronary sinus and its tributary vessels were seen to contain large numbers of air bubbles. The thorax was then filled with water and the heart showed a marked tendency to float. The heart was depressed with the fingers so that it was completely immersed below the surface of the water, and the lateral margin of the right ventricle was snipped with scissors. An impressively large volume of gas rose to the surface. This must have almost completely filled the right side of the heart, because very little blood escaped after opening the heart and only a small clot was present.

On further examination of the heart the foramen ovale was found to be patent but well guarded by valve action. The anterior cusp of the aortic valve was adherent to the right posterior cusp, and this may have slightly impaired the efficiency of the valve, but the defect was not a gross one. No marked pathological changes of the other valves were seen. The coronary arteries showed only minor atheromatous changes.

Discussion

Air embolism may involve the right side of the circulation, the left side, or both sides. In this case it seems that air entered the torn slightly elevated axillary vein and made its way to the right side of the heart, where it was found in large quantity. This was undoubtedly the cause of death. Post-mortem examination confirmed the presence of a minor lesion of the aortic valve which had been detected clinically fifteen years previously, and the condition of the heart may have been a contributory factor.

Opinions differ regarding the minimum volume of air that, by entering the circulation, may produce a fatal result. Richardson, Coles, and Hall (1937) examined the results of experiments carried out on dogs by Harkins and Harmon (1934) and, applying these results to man, came to the conclusion that the rather large amount of 480 c.cm. would be necessary to cause death. In the course of their own work on dogs, however, Richardson and his colleagues showed that several factors governed the amount of air necessary to kill their animals. Chief of these was the rate of entry of the air, but they also found that the general condition of the animal as evidenced by the systemic blood pressure played a great part in determining tolerance to intravenously injected air. Much less air was fatal to animals with low blood pressure than to those with a normal blood pressure. These investigators considered that such factors as trauma, pain, apprehension, loss of blood, etc., were also of paramount importance. Simpson (1942) claims that under certain circumstances even 10 to 15 c.cm. may cause a fatal outcome in human beings. Whitby and Britton (1946) accept his statement that while a surprisingly large volume of air can be tolerated by a healthy subject, no more than a few cubic centimetres may precipitate death in a patient gravely ill.

Although air embolism was suspected as the cause of death in our case, post-mortem examination was necessary to prove that this was correct. In some cases a hissing noise may be heard as air enters the vein, and in animals splashing and churning noises may be heard with the unaided ear. In human beings, however, such findings must be rare, and the cause of death may be unsuspected until revealed at necropsy. Evans and Murley (1945) report such a case, and state that necropsy prevented the death being written off as due to a complication of severe malaria. Auer and Krueger (1946) report a similar experience following operative procedures on the spinal cord and skull in a number of rabbits. These animals died more or less acutely, and death was at first attributed to "vascular shock." After careful necropsy death was ascribed to air embolism associated with fibrin formation in the right ventricle of the heart. There is no doubt that the diagnosis of air embolism must often be missed unless a post-mortem examination is carried out, and Simpson has suggested that the diagnosis of air embolism may be missed even at necropsy if not previously suspected.

Summary

A case of fatal air embolism during mastectomy is described. Diagnosis of air embolism may be missed unless a post-mortem

examination is made, and even then may, in view of the small volume of air sometimes involved, be overlooked unless previously suspected.

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HYPERTROPHIC PYLORIC STENOSIS IN THE ADULT

BY

A. HOBSON, F.R.C.S.

Consulting Surgeon, Battersea General Hospital; Surgeon, Nelson Hospital

Hypertrophic pyloric stenosis in the adult is a somewhat unusual condition but is perhaps not quite as rare as it is held to be. In four years I had two cases that showed one or two unusual features, and therefore put them on record. A full bibliography and a discussion of the condition appear in an article by Howard Wakefield (1944).

The condition appears much more often in men (80%). Most patients have persistent stomach trouble, mild in character, from birth onwards. This characteristic suggests that, aetiologically, the stenosis is a persistence of a milder congenital stenosis. The usual complaint is of bouts of vomiting or of a feeling of nausea after meals. Pain is absent or slight. Few, if any, develop gastric or duodenal ulceration. The cases are nearly always diagnosed as carcinoma ventriculi and operated upon as such. In fact, the consensus of opinion is that diagnosis of the condition before operation, or even at operation, is difficult if not impossible with safety to the patient. In other words, the condition must be treated as a carcinoma even if a strong suspicion is felt as to the correct diagnosis. A mass is rarely palpable before operation.

Radiography reveals an elongated pyloric canal devoid of peristalsis (Berk and Dunlap, 1944). Macroscopically, the muscular coat of the pylorus is much hypertrophied and the circular coat on section tends to present the appearance of a palisade. The thickening ends abruptly on the duodenal side but shades off into normal thickness towards the stomach. To the naked eye the resemblance to "leather-bottle" stomach is close. The maximum thickness of the hypertrophied muscle yet reported appears to be about 1/3 in. (0.8 cm.). Microscopically, chronic gastritis is shown. About 100 cases are on record, including 81 out of 60,000 gastric patients treated at the Mayo Clinic from 1927 to 1931.

The two cases here reported were both in females, and were unusual in the complete absence of any history of gastric upset until very shortly before operation. The *x*-ray picture in both cases was typical, and, except for the extraordinary thickness of the pylorus in the second case, the appearances at operation and pathologically were again typical. One of these patients, who was somewhat peculiar mentally and who was in the habit of consuming large quantities of raw rice and lentils (whether the cause of the disease or a consequence cannot be said), had a hyperchlorhydria, the other an achlorhydria. It has been noted that the condition seems to occur in "aggressive and martial" types. Both these patients were quiet and somewhat subdued.

As I have had these two cases within such a comparatively short time, it is quite possible that milder degrees of hypertrophic pyloric stenosis are commoner in adults than is supposed and may be missed if not specially looked for. In cases of persistent gastric trouble, with some stenosis revealed on radiography and little or nothing found at operation, it would seem advisable to keep the condition in mind. Whether any less drastic treatment than partial gastrectomy would suffice to bring about a cure in the milder cases it is difficult to say, but it would seem well worth while to try the effect of simple gastrojejunostomy or a plastic operation on the pylorus, provided the diagnosis was clear enough at the time of operation.

Case 1

Mrs. B. E. V., aged 55, had had an epigastric pain radiating to the left side of the abdomen for two months; vomiting for three to four weeks, chiefly in bed at night; a feeling of fullness later and of a heavy weight across the upper part of the abdomen; and a loss of appetite for more than a year. There had been much loss of weight during the last few months (this is the patient who had a passion for raw rice). She had been in hospital two months previously with a mild chronic nephritis.

Examination showed the patient to be somewhat thin; there was a systolic murmur in all areas, and tenderness in the epigastric region. No mass was felt. Cystocele was present: she had to get up three times a night to pass water. Radiographs showed a persistent filling defect of the antrum, with an irregular outline typical of carcinoma ventriculi. There was a considerable gastric residue at six hours. A test meal revealed hyperacidity and no blood. A blood count showed: red cells, 4,000,000; Hb, 74; colour index, 0.9.

At operation the pyloric end of the stomach was found to be much thickened but soft. A partial gastrectomy was performed, with a posterior gastrojejunostomy after dividing the ligament of Treitz. On the day after operation there was a little basal collapse; this soon cleared up, and the patient progressed very well. When readmitted to hospital two months after her operation for a colporrhaphy she was in very good health and underwent the operation without untoward effects. One year later she was still in very good condition, with no gastric symptoms, good appetite, and a more normal weight.

On section of the pylorus the pathologist reported: "Chronic gastritis with oedema of slightly fibrotic hypertrophied muscle of pyloric part of stomach." Naked-eye inspection of the pyloric end of the stomach revealed a great thickening of the muscular coats, which measured quite 1/3 in. (0.8 cm.) across. The muscle showed a typical palisade appearance. The hypertrophy stopped short at the duodenum but gradually shaded off into normal stomach wall at about the middle of the lesser curvature.

In view of the connexion between pyloric stenosis and uraemia it is interesting to note that two months before gastrectomy her blood urea was 94.28 mg. per 100 ml.; at the time of operation it was 40.5 mg., and three months later it was only 17.15 mg.

Case 2

Mrs. F. A., aged 54, complained of pain in the lower chest for six weeks, with a loss of 12 lb. (5.4 kg.) in the last four months. She felt sick all the time, bringing up water, and occasionally food. Pain came on a quarter of an hour after food and lasted a few minutes. There was a tendency to feel faint. She started to get a little indigestion about 18 months before. Her appetite was poor.

On examination a definite mass could be felt at the pyloric end of the stomach.

Radiography (see illustration) showed a filling defect, giving a smooth and non-contractile outline to the pyloric end of the stomach extending from the pylorus to half-way along the lesser

curvature. The radiologist reported: "Findings consistent with an extensive pyloric carcinoma." A test meal showed complete achlorhydria with a low total acidity. Occult blood, negative; blood urea, 50 mg. per 100 ml.

Tracing of radiograph of Case 2. X=filling defect.

At operation the pyloric end of the stomach was found to be thickened and the transverse mesocolon was adherent to the stomach, the adhesions involving the middle colic artery. A partial gastrectomy with a posterior anastomosis was performed with some difficulty. The patient made an uninterrupted recovery.

The following is a report on the pathological findings, naked eye and microscopical, by Dr. Stanley F. Marshall: "There is marked hypertrophy of the outer muscular coat, which is visible macroscopically on the slide. Microscopically, large bundles of smooth muscle fibres are seen—presumably the longitudinal coat beneath the serous coat and occupying about two-thirds of the thickness of the wall, which is about 1/2 in. (1.25 cm.) thick at its widest. Lymphocytic aggregations are scattered among and superficial to these hypertrophied muscle fibres. Numerous granulation and inflammatory cells are seen in the submucous coat. Three lymph glands in the vicinity show moderate inflammatory reticulosis only. No evidence of malignancy was seen." Naked-eye examination showed typical palisading of the muscular coat, which when first removed from the patient was nearly 3/4 in. (1.9 cm.) thick.

Summary

Two cases of hypertrophic pyloric stenosis in the adult are reported. Both show an absence of the usual lifelong history of gastric discomfort. One had a remarkably thick muscular coat and presented a palpable mass before operation.

The view is expressed that mild degrees of the condition may be relatively common, and the suggestion made that if the difficulties of accurate diagnosis can be overcome some less drastic treatment than partial gastrectomy may be possible.

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Under the new national insurance scheme, which comes into full operation on July 5, 1948, a single contribution card will be issued for each insured person. The contribution will be paid by affixing a single stamp to this card. The standard card, which will be current for 52 weeks, will consist of two leaves, but some of the cards issued at the outset of the new scheme will cover a period of 74 weeks and will consist of three leaves.

CONGENITAL HYPERTROPHIC PYLORIC STENOSIS

REPORT OF FOUR CASES IN BROTHERS

BY

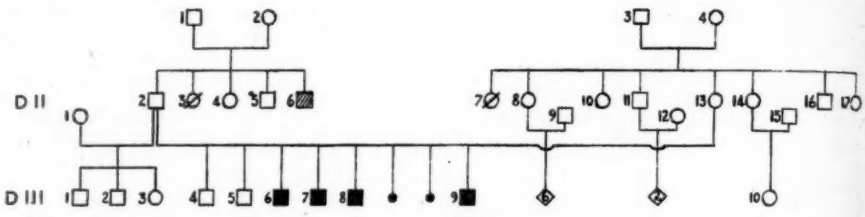
A. A. H. GAILEY, M.D., D.C.H.

Medical Registrar at the Belfast Hospital for Sick Children

Several authors have reported two or three siblings with congenital hypertrophic pyloric stenosis, but in search of the literature I have been able to find only one instance of this condition being discovered in four members of the same family—a family reported by Finkelstein, quoted by Sauer (1924). Each of the four cases here reported shows the classical clinical picture. They were the children of the father's second marriage, and were preceded by two step-brothers, one stepsister, and two brothers, all of whom were normal. The clinical features are outlined in the table.

Clinical Features of the Cases

Clinical Features	Peter D III/6	John D III/7	Brendon D III/8	Patrick D III/9
Date of birth	29/3/39	9/6/41	30/7/43	6/2/47
Gestation, labour, delivery	Normal	Normal	Normal	Normal
Sex	Male	Male	Male	Male
Position in family	3rd	4th	5th	6th
Birth weight	9 lb. 8 oz. (4·3 kg.)	6 lb. 10 oz. (3 kg.)	9 lb. (4·08 kg.)	10 lb. (4·53 kg.)
Foetal abnormalities	None	None	None	Hypospadias
Feeding prior to symptoms	Breast	Breast	Breast	Breast
Age at onset of symptoms	59 days	7 days	15 days	10 days
Projectile vomiting	Yes	Yes	Yes	Yes
Visible peristalsis	Yes	Yes	No note	Yes
Pyloric tumour palpable	Doubtful	Doubtful	No note	No
Bowel action	Constipated	Constipated	Normal	Constipated
Age on admission	78 days	18 days	27 days	37 days
Dehydration before operation	Yes	No	Yes	No
Age at operation	80 days	19 days	28 days	38 days
Age on discharge	85 days	21 days	31 days	42 days


D II
D III
Key
I Earliest generation known.
D II Descending or subsequent generations.
D III
1, 2, 3... Individual members of a generation are numbered thus left to right. Siblings in order of birth, the eldest on the left.
Male.
Female.
Key
Female death in infancy (under 7 years).
Individual showing trait.
Individual suspected of showing trait.
Children of collateral relatives—not desirable to show individually. Figure inside symbol indicates number of siblings.
Miscarriage.

In each of these cases Rammstedt's operation was successfully performed and convalescence was uneventful. The three older boys have "never looked behind them," and have developed into normal healthy boys. The baby (Patrick), more than two months after his operation, is thriving and putting on weight regularly.

An attempt was made to gain enough information to prepare a family tree, but the parents (Mr. and Mrs. C.) were unable to remember any details before their own generation, and as the grandparents are dead and the rest of the family scattered it was impossible to build up a complete picture of the family. However, the accompanying genealogical table shows the details that were obtained of the two generations. The symbols used are those recommended by the Eugenics Society.

In the generation D II there are three interesting members. D II/3 and D II/7 were sisters of Mr. C. and Mrs. C. respectively, and both died at the age of 2 years, the cause of death and the nature of the illness being unknown. D II/6, a brother of Mr. C., was reported to

have been ill from shortly after birth with severe "gushing" and persistent vomiting, so that both breast-feeding and bottle-feeding were impossible, and he was able to keep anything down only by receiving very small feeds from a spoon. After a very stormy illness, during which there were times when his life was despaired of, he started to make a recovery about the age of 1 year and is now reported to be a very healthy man in Canada. This boy's illness was considered by his mother, I/2, to have been exactly the same as that of her grandson, Peter D III/6, the first case of this report. In view of this story I have ventured to record him as a suspected case of congenital hypertrophic pyloric stenosis, and have represented him as a shaded square.

While there is still disagreement on the aetiology of congenital hypertrophic pyloric stenosis, most authorities seem to agree that the condition is congenital, that the hypertrophy is primary, and that the spasm, to which the clinical picture is probably due, is secondary to the hypertrophy. In this family the condition appears to have been transmitted as a Mendelian recessive character.

I am grateful to Dr. F. M. B. Allen, under whose care they were, and to Mr. H. P. Hall and Mr. J. S. Loughridge, who performed the operations, for permission to publish notes of these cases.

REFERENCE

Sauer, L. W. (1924). *Arch. Pediat.*, **41**, 145.

Medical Memoranda

A Case of Epidermolysis Bullosa

The following case is considered to be an example of epidermolysis bullosa and to belong to a rare variety which develops in adult life. It is stated in the literature that some cases resolve spontaneously; it is therefore notable that in the present case relapse occurred two years after spontaneous recovery from the disease.

CASE HISTORY

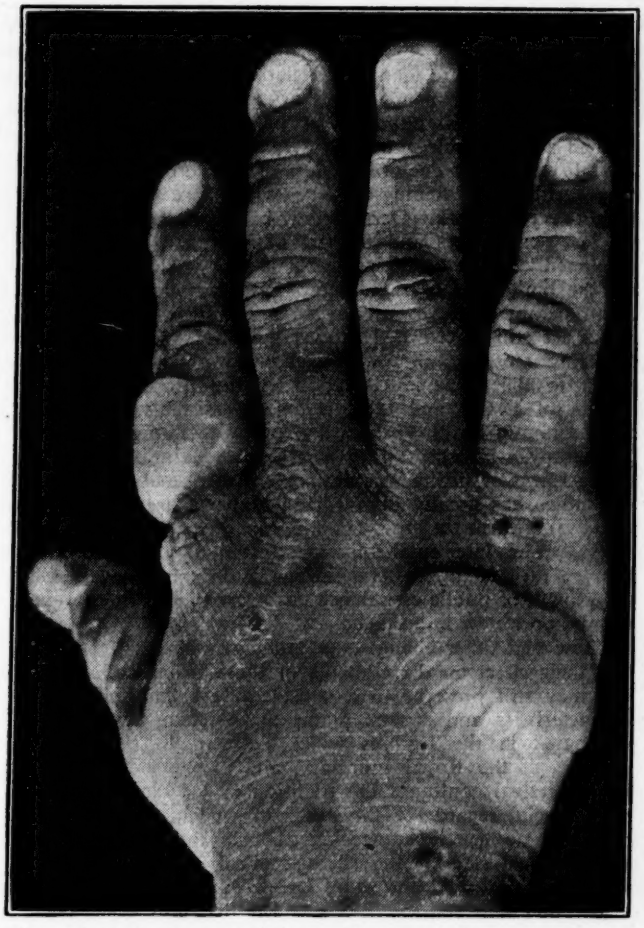
A naval telegraphist aged 19 was sent to hospital complaining of blisters forming on his hands. It appeared that for about two years he had been liable to lose large areas of skin if he slipped and bruised himself. The skin "slid off." Confirmation of this was supplied by the numerous discoloured areas in places where trauma was readily sustained, but there was no scarring anywhere. About eighteen months previously he had a similar attack involving the hands; this cleared up quite quickly, and recently he had been under treatment with impetigo of the face, which was also of a vesicular nature and which cleared with penicillin cream. There was no other relevant previous history or any relevant family history.

On examination many flaccid and unilocular blisters varying in size from 3 by 2 in. (7.5 by 5 cm.) to minute vesicles were seen arising off normal skin and unattended by itching, soreness, or malaise (see photograph). The skin enclosing the blisters was noticeably tough. Burst blisters dried up and did not form crusts, nor did the blister contents tend to become purulent. The bullae were at the time confined to the hands, but there were discoloured marks of old lesions on the elbows and a few on the shins and knees. His nails and teeth were normal. Examination of other systems revealed no abnormalities. The fundi were normal, and there was no hyperhidrosis. A blood count showed: R.B.C., 4,960,000 per c.mm.; haemoglobin, 96% (Sahli); colour index, 0.97; W.B.C. 9,600 per c.mm. (polymorphs, 37%; lymphocytes, 57%; monocytes, 3%; eosinophils, 3%). A further count seven days later gave a similar result. The Paul-Bunnell reaction was positive to 1 in 16 only. A radiograph of the chest revealed nothing abnormal. The urine was normal; there were no bromides or iodine, and no darkening on standing. The Kahn test was negative. The blister fluid was sterile on culture; cytology: 3% polymorphs, 96% lymphocytes, and 1% eosinophils.

A small area of skin on the back of the hand was rubbed firmly and a blister formed in 18 hours.

COMMENT

Differential Diagnosis.—Apart from many easily excluded bullous diseases, there are a few which can give trouble in differentiation. These, with the main points of difference, are: (1) *Pemphigus*:—The health deteriorates, and the patient with well-developed pemphigus is usually an ill person; widespread and not confined to traumatic areas. (2) *Impetigo bullosum*:—Typical lesions elsewhere and presence of infection. (3) *Iodism* and *bromism*:—Test urine. (4) *Syphilis*:—History and positive Kahn reaction. (5) *Syringomyelia*:—No other confirmatory signs. (6) *Dermatitis herpetiformis*:—Polymorphism and itching.



The patient's hand on admission. (Photograph by courtesy of the Fleet Photographic Officer, Malta.)

Treatment.—Arsenic in various forms is recommended, but it has had no effect in this case. Ultra-violet light is also said to be of use, but, in the main, treatment must be symptomatic until the cause of this disorder is discovered. It is perhaps notable that the first attack in this case subsided after six weeks without any other than protective treatment.

I am indebted to Surgeon Rear-Admiral Brownfield for permission to publish this case.

B. S. LEWIS, D.S.C., M.R.C.S., L.R.C.P.,
Surgeon Commander, Royal Navy.

Speaking at the annual general meeting of the Industrial Welfare Society on Nov. 25, 1947, Lord Trent said that there had been a considerable increase in membership. Requests for information about personnel policy poured into headquarters all the year round, and more than 2,500 such inquiries had been dealt with. During the year some 715 firms had been visited. Specialist advice was given on such subjects as education and training schemes, canteen planning, joint consultative machinery, the organization of personnel departments, and many others.

Reviews

DERMATOLOGY

An Introduction to Dermatology. By G. H. Percival, M.D., Ph.D., F.R.C.P.Ed., D.P.H. (formerly by Norman Walker, M.D.). Eleventh edition. (Pp. 349; 233 illustrations, 146 in full colour. 35s.) Edinburgh: E. and E. Livingstone. 1947.

Précis de Dermatologie. By A. Civatte, M.D. (formerly by Prof. J. Darier). Fifth edition. Collection de Précis Medicaux. (Pp. 1152; 269 figures. 1,700 francs.) Paris: Masson et Cie. 1947.

These two books are among the classics of dermatology. Sir Norman Walker brought out his original edition in 1899, and Prof. Darier's *Précis* appeared in 1909. Both have therefore attained a respectable antiquity as textbooks in their specialty. Though we have to deplore the loss of their creators, they have been fortunate in finding the successors to carry on and reinvigorate their work. Dermatology has changed greatly during the last forty years and the art of treatment especially has developed. At the beginning of this century neither the powers nor the limitations of radiotherapy had become apparent, and chemotherapy had yet to be born. Though the out-patient clinics are still as crowded as ever they were, the type of case occurring most commonly has changed a good deal, partly owing to the hygienic education of the people by medical officers of health and their technical assistants, the sanitary inspectors and health visitors, and partly to improved methods of therapy. Except during wars and revolutions the more severe forms of pediculosis are seldom seen, and the incidence of scabies has greatly diminished; alopecia areata has superseded ringworm as the commonest affection of children's scalps. The late cutaneous manifestations of syphilis have become rarities in Western Europe and North America, and the growth of public conscience has caused industrial dermatitis to take on a new importance.

These and other changes, too numerous to detail here, have had their effect on the contents of these two excellent books, but they still preserve to a considerable extent their original characteristics and ground plan. Sir Norman Walker's book originated in the lectures which he used to deliver to his students at the Royal Infirmary, and in the eleventh edition Prof. Percival continues the tradition of teaching dermatology with special regard for the needs of students most of whom will become general practitioners. He therefore emphasizes the practical side of the subject. Prof. Darier's work, now edited by his friend and pupil Dr. A. Civatte, is more philosophical and detached in outlook and rather more comprehensive in scope. As the author points out in the introduction, it is primarily intended for those starting to specialize in dermatology and for other postgraduate students. It is still divided into two parts. The first is on the morphology of the pathological changes which may develop in the skin; in spite of their wonderful variety most of them can be regarded as derived from certain fundamental primary lesions. The second is on nosography—i.e., the aetiology and development of different skin diseases. Dividing the book into two such sections is bound to cause some repetition, but the author has reduced it to the minimum.

As is almost always the case, the book has increased in size with each edition, but Sir Norman Walker, and now Prof. Percival, have prevented excessive overgrowth by careful pruning. It is set in somewhat smaller type, and the paper is rather thinner, so that although there are twenty more pages than in the fourth edition the volume is rather slighter and easier to handle. Prof. Darier's *Précis*, on the other hand, has increased from 700 to 1,100 pages of rather larger size. Both books are copiously illustrated, and Prof. Percival has included no fewer than 146 coloured plates; the illustrations in Dr. Civatte's book are all in monochrome, though the photographs are beautifully reproduced. It is still doubtful whether coloured photographic reproductions are best for illustrating dermatological books; at any rate they must be of the highest technical excellence. Occasionally the colour values in Prof. Percival's book fall short of perfection. Nevertheless we have no hesitation in warmly recommending both these works to the medical public, especially to those particular sections for which they are primarily intended—Prof. Percival's *Introduction* to the undergraduate and general practitioner, Dr. Civatte's *Précis* to those who intend to make dermatology their chief study.

H. HALDIN-DAVIS.

SEROLOGY

Nozioni di Immunologia. Le Reazioni Antigene-Anticorpo Applicate alla Diagnostica, Terapia e Profilassi. By Prof. E. Carlinfanti. (Pp. 760; illustrated. No price given.) Milan: Istituto Sieroterapico Milanese Serafino Belfanti. 1946.

The field of serology is now so large that few workers can hope to cover it completely. An extensive practical experience of serological work does not necessarily connote an understanding of the fundamental principles of antigen–antibody reactions: nor do those who have devoted many years of their lives to the study, let us say, of antigenic structure necessarily have more than a circumscribed view of serological reactions as a whole. It is therefore all the more interesting and praiseworthy that a single worker should have attempted to present a conspectus of modern knowledge on the subject. Prof. Carlinfanti has set himself the difficult task of reviewing the theoretical, technical, and statistical aspects of serology. It is difficult to define exactly the scope of this work. The title suggests that he would discuss the cellular defence mechanism of the body and the multiple factors determining the reaction of the host, but he does not. It would, perhaps, be better to have omitted the main title, which is somewhat misleading, and to have adopted the subtitle of "Antigen–antibody reactions applied to diagnosis, treatment, and prophylaxis." Even this, however, is hardly suitable for a book that seems not to include any description of the tuberculin reaction and yet contains a long account of the preparation, testing, and practical use of bacterial vaccines.

The volume begins with chapters on the properties of antigens and antibodies, on the concept of specificity, and on the antigen-antibody reaction. Then follows a general section containing an account of the main serological reactions, with notes on technique, on the preparation of immune sera, and on the measurement of the antigenic potency of vaccines. In the main part of the book the author considers the various serological reactions in different diseases. He finds it difficult to decide how much to restrict his account to diagnosis of the disease and how much attention to devote to the exact identification of the infecting organism. On the whole he has emphasized the former, with the result that the serological classifications, for example, of the streptococci, the dysentery bacilli, and the leptospirae, all suffer from what might be regarded as inadequate treatment. In this part of the book he briefly describes the antigenic structure of some of the commoner animal viruses, the fungi, protozoa, helminths, venins, and neoplasms, and includes two long sections on blood groups and the Wassermann reaction.

The author considers some subjects more fully than others, and it is clear that, like many other workers, he has suffered from being deprived of access to a great deal of the scientific literature during the war years. This has resulted in the omission of much that has been reported in British and American publications. Within the limits, however, of the space allowed him he has made a brave attempt to fulfil his task, and we wish the book every success.

G. S. WILSON.

MEDICINE AND SOCIETY

Medical Services by Government. Local, State, and Federal. By Bernhard J. Stern, Ph.D. Studies of the New York Academy of Medicine Committee on Medicine and the Changing Order. (Pp. 208. $1.50 or 8s. 6d.) New York: The Commonwealth Fund. London: Geoffrey Cumberlege, Oxford University Press. 1946.

Our colleagues in the U.S.A. are tackling with characteristic energy and thoroughness the national aspect of a world-wide problem—namely, how to provide a complete medical service for all who need it. The New York Academy of Medicine set up a committee whose reference is "to review the nature, quality, and direction of the economic and social changes that are taking place; to define how these are likely to affect medicine; and to determine how the best elements in medicine may be preserved, embodied, and extended in whatever social pattern

may ultimately appear." It was obvious that in recent years there had been in the U.S.A. a great extension of State and Federal activities in this field and that one of the first requirements of the committee was to know how far and in what ways this tendency had evolved. This book, fathered by the Commonwealth Fund and written by Dr. Bernhard Stern, lecturer in sociology, Columbia University, seems to supply the need very adequately.

Dr. Smillie in a preface says that practically all government procedure in medical care stems from the original local community responsibility for the care of the sick poor. Dr. Stern confirms this and traces it from the ground upwards. Many of the problems dealt with are familiar to us, but we have been mercifully spared one of the toughest which is inherent in the federal system of government in an immense country. The individual States are shown to be jealous of Federal encroachments on their rights, and in their turn find similar jealousies in smaller community authorities. This attitude has led to great discrepancies in the amount and quality of medical services provided communally. Though Dr. Stern does not directly suggest remedies for this, it seems probable that many of them will be met by increasing central financial grants, with, no doubt, increasing central direction. The book is very fully documented.

ALFRED COX.

VIENNESE TWILIGHT

The Art of Healing. By Bernard Aschner, M.D. (Pp. 336. 12s. 6d.) London: Research Books, Ltd. 1947.

This book is written by a gynaecologist who taught "medicine at the University of Vienna from 1918 to 1938" and who is said to have written several medical textbooks in explanation of the methods used by himself in the treatment of disease and now dignified by the title of "Constitutional Therapy." These methods include bleeding, cupping, and leeches as a means of eliminating various toxins (menstruation is highly commended for the same reason, which makes the male reviewer feel for the first time that he may have missed something after all), emesis as a treatment for schizophrenia, and the employment of many drugs long since excluded from orthodox medicine by reason of their pharmacological inertness. This system of "Constitutional Therapy" should not be confused with that described in the excellent book by Julius Bauer, another physician from Vienna, entitled *Constitution and Diagnosis*—medical philosophy of a very different order.

The author supports his claims by a series of dogmatic statements whose refutation would occupy a regiment of research workers for a lifetime. He quotes, with disapproval, the retort of a scientist to whom he was explaining the importance of the colour of hair, eyes, and skin in assessing constitution: "You are quite right. Unfortunately I still have another twenty years of cranial measurement to do, and then perhaps I shall find time for the problem of complexion." Dr. Aschner has preferred what Almroth Wright used to call the *saltus empiricus* and has no doubt already received his reward, but he cannot hope to succeed in his avowed aim "to re-establish fully the partially shattered confidence of the public in scientific medicine." British physicians see more clearly than the author the limitations of present-day therapy—its mechanism, its preoccupation with the end-results of disease processes, its failure to consider the whole man—but that does not mean that we wish to return with him to the mediaeval mess of leeches, purges, emetics, and clysters from which we have just painfully emerged.

D. V. HUBBLE.

As Rhine and Carington have shown, it is possible to write dispassionately about extra-sensory perception, telepathy, precognition, and similar subjects. These workers and Dr. Soal have accumulated valuable experimental data under rigid laboratory conditions. It is a pity that Mr. G. N. M. Tyrrell has not found more space in *The Personality of Man: New Facts and their Significance* (Pelican Books, Harmondsworth, 1s.) to discuss work of this kind; he makes good the deficiency by an abundance of material of a more anecdotal and dramatic nature. His book is frankly polemic. He has a bone to pick with the scientific critics, whose attitude he attributes to "a quite primitive psychological foundation"; and he underestimates the force of their objections. It is to be feared that his aggressive partisanship will come between him and the inquiring reader.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

The Transactions of the Hunterian Society. Vol. V. Edited by Mr. A. E. Mortimer Woolf. (Pp. 119. No price.) London: Metropolis Press. 1946–7.

Includes Hunterian Oration on "Literary Surgeons," by Zachary Cope, a discussion on "Flatulence," opened by Geoffrey Evans, and a discussion on "Sprains and Strains," opened by Sir R. Watson-Jones.

The Medical Annual, 1947. 65th Year. Edited by Sir Henry Tidy, K.B.E., M.A., M.D., F.R.C.P., and A. Rendle Short, M.D., B.S., B.Sc., F.R.C.S. (Pp. 441. 25s.) Bristol: John Wright and Sons, Ltd.; London: Simpkin Marshall (1941), Ltd.

Recent advances in medical and surgical treatment.

A Memory of Solferino. By J. Henry Dunant. (Pp. 64. 6s.) London: Cassell and Co., Ltd. 1947.

A short story of battle by the founder of the Red Cross.

Gifford's Textbook of Ophthalmology. By Francis H. Adler, M.D. 4th ed. Illustrated. (Pp. 512. 30s.) London and Philadelphia. W. B. Saunders Company.

Intended particularly for the medical student and general physician.

Developmental Diagnosis. By Arnold Gesell, M.D., and Catherine S. Amatruda, M.D. 2nd ed. (Pp. 496. 32s. 6d.) London: Hamish Hamilton Medical Books. 1947.

An account of abnormalities of physical and mental development.

Some Lessons of War-time Psychiatry. By Kenneth Soddy, M.D., D.P.M. (Pp. 23. 1s.) London: National Association for Mental Health.

Makes suggestions about a psychiatric service in the light of experience gained during the war.

The Story of St. Thomas's, 1106–1947. By Charles Graves. (Pp. 72. 8s. 6d.) London: Adprint, Ltd. 1947.

A short illustrated history of the famous teaching hospital.

Johannes Fibiger. By Knud Secher. (Pp. 206. £1.) London: H. K. Lewis. 1947.

A biography stressing particularly Fibiger's contributions to cancer research. In English.

Lectures on the Liver and its Diseases. By H. P. Himsworth, M.D., F.R.C.P. (Pp. 204. 18s. 6d.) Oxford: Blackwell Scientific Publications. 1947.

An account of recent knowledge about the liver, its functions and disorders.

Hipertensión Arterial y Tiocianato de Potasio. By Alfredo Claudio Carrera. (Pp. 434. No price.) Buenos Aires: Estudio Clinico y Experimental. 1946.

A monograph on hypertension and its treatment by potassium thiocyanate.

The Internal Fixation of Fractures. By C. S. Venable, M.D., M.S., F.A.C.S., and W. G. Stuck, M.D., M.S., F.A.C.S. (Pp. 237. 30s.) Oxford: Blackwell Scientific Publications. 1947.

An account of the history and modern methods of fracture fixation by means of internal appliances.

A Hand-Book of Ocular Therapeutics. By the late Sanford R. Gifford, M.D., F.A.C.S. Revised by D. Vail, M.D., D.O., F.A.C.S. 4th ed. (Pp. 336. 25s.) London: Henry Kimpton. 1947.

A manual of therapeutics in ophthalmology. The chapter on disorders of the muscular apparatus has been removed.

London Children in War-time Oxford. By a Barnett House Study Group. (Pp. 113. 6s.) London: Geoffrey Cumberlege. 1947.

A survey of the effects of wartime evacuation on children.

The 1947 Year Book of General Therapeutics. Edited by Oscar W. Bethea, Ph.M., M.D., F.A.C.P. (Pp. 455. 21s.) London: H. K. Lewis.

A summarized account of recent advances.

Basic Mental Concepts. By Edward Glover, M.D. (Pp. 32. 3s. 6d.) London: Imago Publishing Co. 1947.

An account of the basic concepts of psycho-analysis.

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WHY BE FEARFUL?

The Representative Body last week said No with a determined voice. Some doctors were naturally anxious about the financial risks of saying No. The fear of the paymaster was upon some of them—a fear, no doubt, that Mr. Bevan counts upon in his estimate of the chances of successful resistance by the profession to his Health Service Act in its present form.

Mr. Bevan has the power of the purse—or will have if the profession decides to enter his Service on July 5. But, as Dr. Dain told the Representative Meeting last week, we have only one thing to fear—"and that is that the profession does not know its own mind." It is for medical men and women to state the mind of the medical profession without fear in answering the questions on the plebiscite form to be sent out on Jan. 31. Opposition to the Act will be offered if a sufficient majority which includes 13,000 general practitioners votes No.

In its present form the Act is the first and irrevocable step towards a whole-time State Medical Service (not "Health" Service). If doctors are convinced that this is so, and if they hold fast to their centuries-old detestation of State medicine—then the Noes will have it. The Council and the Representative Body have given the lead asked for. It will abide by the decision of the majority as stated.

Medical men and women must vote on the merits of the case. If they believe their case to be good and just, their fears will once again be traitors. Montgomery knew it was fear that would defeat our Army at El Alamein—not the supposed superiority of the enemy. He forbade his officers to use phrases such as "It's bound to come." His first job was to eliminate fear and the use of fearful slogans by his troops. And he won his battle. If the plebiscite provides the necessary volume of Noes we shall win our fight with the Minister of Health if we succeed in banishing fear and move forward with the strength of conviction.

What are the fears that men have? Doctors are not business men. They do not form a class whose money comes to them by heredity. They work hard—probably harder and certainly for longer hours than any other section of the community. They are subject to great strain and risk of ill health. The love of their work makes them put up with much that no other group of workers would tolerate. Next to their work what they most prize is freedom—freedom to practise what they are taught and to carve out a career by hard endeavour. In Britain this freedom is secured by the ownership of general practices and by voluntary service in hospitals. This freedom is now being undermined. What medical men most fear is this loss of freedom. By standing firm they can retain it.

Mr. Bevan thinks he has a trump card in denying compensation to those general practitioners who do not enter the Service on July 5. Is he right? The Association will advise general practitioners not to enter the Service only if the number who say No is sufficient to defeat Mr. Bevan. This number must be large enough on Jan. 31 and remain large enough until July 5. Faced by what will probably be overwhelming opposition Mr. Bevan will choose between postponing the appointed day or adhering to it. If he postpones it the compensation and other issues will also be postponed, and National Health Insurance will continue. If he does not postpone it he will be unable to operate his Service because he will not have the man-power. Again, he is defeated. He must in that case come to terms with the medical profession, terms which will have to be acceptable to those who have voted No. The strength of the profession will lie in the size of the majority against the Act.

The doctor who votes No may temporarily suffer because a doctor in the next street votes Yes. The B.M.A. has substantial funds at its disposal to tide him over this difficulty. In any case the Yes man is unlikely to be a superman, nor even, may it be said, a better doctor. A doctor gives his services and has a right to be paid for them. Mr. Bevan's Health Service is not an insurance scheme, as National Health Insurance is. The man between 18 and 65 who pays his social insurance contribution of 5s. a week is providing only 10d. a week to the Health Service. And nearly half the population of Britain will not even be paying this.

Those who fear that some men may change their No into Yes between February and July may be assured by the knowledge that the B.M.A. will know exactly to what extent this is occurring even if it occurs at all. The B.M.A. will persist in opposition only if the necessary majority is maintained. If the Noes are in the sufficient majority medical men will be asked to form small security groups in each division. They will be asked to enter into bonds with one another, and thus keep firm their Noes.

Consultants and specialists have little or nothing to fear. They will not be able to sign contracts with hospitals, because such contracts will not be ready. In any event the hospitals cannot do without them. Those who sincerely believe that the Act in its present form is directed towards the establishment of State medicine are asked to sign No. Hospital residents—those temporarily in whole-time employment—are asked not to enter the Service as general practitioners or consultants but to carry on with their work.

Doctors have been criticized for being "emotional" over the present conflict. It was the strength of emotion that held this country firm between 1939–45. Emotion, if we are to believe modern psychology, is the driving force behind reason and action. Opposition to State medicine certainly has a basis in reason, but perhaps a much sounder basis in emotion. Five hundred years ago Medicine had to free itself from the dictatorship of authority—the authority of Galen. This freedom was won by men who thought fearlessly. To-day we are faced with that recurring historical phenomenon—the dictatorship of the State. We can defeat this in Medicine if we think and fight fearlessly, and we need not be ashamed of emotion if we avoid that perversion of emotion called hysteria.

STREPTOMYCIN IN TUBERCULOSIS

Streptomycin is so far the only antibiotic of many studied since the discovery of penicillin to take an assured place among systemic chemotherapeutic agents. Experience of its use in this country is so far limited, although it is now a year since the Medical Research Council allocated supplies to a limited number of hospitals with the object of studying its effects both in certain forms of tuberculosis and in other infections specially susceptible to it. The scheme for the treatment of miliary and meningeal forms of tuberculosis has now been extended by the Ministry of Health, and many such cases have been or are being treated, but it is too early to assess results in terms of ultimate prognosis. In the U.S.A., on the other hand, therapeutic studies were begun two years earlier and have since been extended on a scale which our present supplies do not permit. The accumulated experience of American workers is thus a valuable, and indeed almost our only, guide to the clinical use of streptomycin. A leading part in the study of the treatment of tuberculosis has been taken by W. H. Feldman and H. C. Hinshaw, of the Mayo Clinic, the former from the experimental and the latter from the clinical point of view. It is our privilege to publish to-day a paper in which they give a general account of this work and an assessment of its results. Their conclusions are the up-to-date outcome of extensive experience and will command wide attention, even though some of the practical lessons cannot yet be put into effect.

There are two main facts about the acute forms of the disease which we are now treating ourselves. One is that in tuberculous meningitis and miliary tuberculosis early treatment brings about a remission in 50% of cases; the second that such remissions have been observed to last for over two years. On the other hand, if a recurrence takes place, and if the tubercle bacillus has acquired resistance to the drug, further treatment is useless. It will be interesting to have more details of American experience in the treatment of tuberculous meningitis to compare with the remarkable series described by R. Debré and his colleagues in the *Journal* a few weeks ago.[1] Within the compass of a general survey it was naturally not possible to embody a discussion of the indications for streptomycin treatment in pulmonary forms of the disease; these have been defined elsewhere. Further experience has confirmed the earlier conclusion that actively progressive disease is often at least temporarily arrested, with obvious and immediate benefit. Ulcerative lesions of the air passages, notably laryngitis but including similar lesions of the trachea and bronchi and of the pharynx and tongue, appear to respond well and regularly, and treatment is considered to be clearly indicated even though its object may be only palliative. Symptomatic relief can also be obtained in tuberculous enteritis, and here again administration is justified even without hope of effect on the ultimate prognosis. In "surgical" forms of tuberculosis it has also been found that the drug can play a valuable part. As might perhaps be expected by analogy with the action of penicillin, it is without any radical effect on established disease of bones and joints. Unlike penicillin, it is incapable of sterilizing large collections of pus; it has previously been pointed out that this is probably due to the great diminution in activity of streptomycin in an acid medium. On the other hand, with the protection afforded by the drug, such collections can now be drained, a procedure which otherwise is usually inadvisable. As an aid to surgical treatment in general, and particularly radical thoracic surgery, streptomycin is likely to prove of great value. Like other forms of chemotherapy, it is seen at its best when combined with appropriate surgical treatment rather than when relied on alone.

There is another side to this picture which is less encouraging; indeed, if one looks to the ultimate future of streptomycin treatment it can encourage nothing but frank pessimism. The unexampled degree and rapidity of bacterial habituation to streptomycin were recently discussed in these columns[2]; unfortunately *Myco. tuberculosis* is no exception, although its acquisition of resistance, like everything else it does, seems to proceed in a more leisurely fashion. It has been shown in connexion with other species, notably *H. influenzae*,[3] that large bacterial populations contain a small minority of naturally resistant cells, the exclusive multiplication of which during exposure to streptomycin, whether *in vivo* or *in vitro*, is evidently the source of the resistant populations produced. It appears from the studies of Marjorie M. Pyle[4] that this is also true of the tubercle bacillus. Her method was to make quantitative cultures of the sputum of patients before and during streptomycin treatment for pulmonary tuberculosis, using sealed plates of an egg medium containing 9 different concentrations of streptomycin, from 1 to 1,000 micrograms per ml. In 7 out of 8 cases a few colonies (representing one in many thousands of the numbers on normal medium) were obtained on media containing 5 or 10 micrograms per ml. before treatment began. During a course of treatment occupying several months there was in 5 of the cases a steady increase in the proportion of resistant organisms and in the degree of their resistance; in one case of which the findings are given in full there were innumerable colonies resistant to 1,000 micrograms per ml. after 12 weeks. In two patients no increase in the resistance of the organism was observed, and in one the increase was only slight. These observations show incidentally that estimations of sensitivity performed with cultures derived from a single colony are of very limited value; we are dealing here with a mixed population in which a wide range of degrees of sensitivity may be represented. But their main lesson is that in perhaps a majority of patients the drug has only a limited time in which to do what good it can; thereafter that strain of tubercle bacillus will be quite unaffected by it. Presumably its resistance will continue in a further host, and patients uncured by this treatment should consequently be looked upon as peculiarly dangerous sources of infection.

Much as we may learn from clinical experience in the U.S.A. there is ample scope for further study, particularly in relation to systems of dosage and the theory of streptomycin action. The tendency has been to reduce both the total dose and the number of daily doses given, a common practice now being to give only two daily. This policy is supported by Feldman's observations in guinea-pigs, when still longer intervals or even treatment during alternate weeks did not appear to impair therapeutic effect. The efficacy of such intermittent attack on the tubercle bacillus seems inconsistent with the idea of a predominantly bacteriostatic effect; surely if this is the mechanism the

[1] *British Medical Journal*, 1947, **2**, 897.
[2] Ibid., 1948, **1**, 20.
[3] *J. exp. Med.*, 1947, **85**, 329, 607.
[4] *Proc. Mayo Clin.*, 1947, **22**, 465.

constant maintenance of an adequate level in the blood and tissues by four-hourly administration should produce better results. Even though penicillin is known to have a bactericidal as well as a bacteriostatic effect, great ingenuity is still being displayed in devising methods of obtaining a more prolonged effect from each dose, on the well-founded assumption that continuous action at the site of infection is superior to intermittent. If this principle is true of penicillin but inapplicable to streptomycin we have yet to find the reason for the difference. Evidently there is one, and the possibilities of experimental study which may throw some light on it have not been exhausted. In the meantime the present system of administration need by no means be regarded as final, and users of streptomycin in this country have the opportunity of trying to better it. The policy advocated by Debré of a week's intensive treatment followed by a smaller maintenance dose is rational and worthy of further study. Perhaps the most difficult question of all is when to stop treatment; in view of the diminishing effect obtained while the bacillus gains resistance, and of our exiguous supplies of the drug, one contribution we might well make to this study is to observe the effects of a shorter course.

RICKETS IN PREMATURE BABIES

Immaturity at birth is the chief cause of death during the early months of life. According to the Registrar-General's *Statistical Review of England and Wales* for 1945 there were 7,530 deaths certified as due to premature birth out of a total of 13,136 deaths ascribed to "diseases peculiar to the first year of life." Sometimes the immature infant dies because it is functionally incapable of adjusting itself to the conditions of post-natal life; perhaps more often an additional factor such as birth injury, asphyxia, or infection is responsible.

The prospects of a premature baby's survival have improved considerably during the present century. It is now realized that with adequate co-operation between general practitioners, obstetricians, paediatricians, and administrative medical officers, and with the necessary financial support, valuable lives may be saved and guided to a normal childhood. The practical possibilities of this work will be appreciated when it is recalled that about 45,000 to 50,000 immature babies are born each year in England and Wales. These infants are prone to anaemia, rickets and other nutritional disorders, infections, delayed intellectual and physical development, and abnormal psychological reactions. A recent paper by Gert v. Sydow[1] presents a study covering a period of six years of the part played by vitamin D and minerals in the development of rickets in premature babies. The most important practical aspects of this work centre around the diagnosis of rickets and the value of human milk in its prevention. The report of the British Paediatric Association on the incidence of rickets in wartime[2] called attention to the difficulties of clinical and radiological diagnosis. Gert v. Sydow's study is especially useful in its correlation of the radiological findings with the changes in the blood. A series of 236 premature babies, whose birth-weights were under 2,000 g. (approximately 4 lb. 6½ oz.), was compared with 292 normal full-term babies. The diagnosis of rickets was made on estimations of the serum phosphatase, inorganic phosphorus, calcium, and total protein and radiological examinations of the left wrist, and the results were studied by careful statistical methods. Metaphyseal decalcification was the earliest radiological change observed in infants subsequently showing signs of rickets. It was noted in more than half the premature infants after the first month of life. Fringing and cortical spurs, seen in the first half of the second month, are the earliest of the definite radiological changes. Cupping, spreading, and periosteal proliferation, to which von Chiari[3] and Malmberg[4] had previously drawn attention, were found only infrequently and were then coincident with or subsequent to calcification at the epiphyseal line, which v. Sydow regards as a sign of healing but not of health. The author makes no reference to symptoms or clinical signs, and perhaps this should be taken to mean that there were none. The point is important and should be settled authoritatively.

The premature baby is in special need of vitamin D because its rate of growth is rapid, fat absorption from the intestinal tract is poor, and its calcium stores are low. Human milk, which has always occupied pride of place as the ideal food for all newly born babies, and especially for those born prematurely, is relatively poor in calcium, phosphorus, and protein when compared with cow's milk. It has been suggested therefore that human milk should not be given to immature babies unless supplemented by additional calcium, phosphorus, and vitamin D.[5] To study this question v. Sydow divided the patients into groups which were offered (*a*) human milk without supplements; (*b*) human milk and large doses of vitamin D; (*c*) cow's milk alone; (*d*) cow's milk and large doses of vitamin D; and (*e*) human milk and various additional calcium and phosphorus preparations. The following conclusions were drawn: human milk may not provide the premature infant with enough phosphorus, though it gives a fairly adequate supply of calcium; the calcium will be insufficiently absorbed unless vitamin D is also given. When cow's milk is used enough phosphorus but not enough calcium will be absorbed unless vitamin D is given.

1 *Acta paediatr.*, 1946, **33**, Suppt. II.
2 *Ministry of Health Report on Public Health and Medical Subjects*, 1944, No. 92, London.
3 *Arch. Kinderheilk.*, 1938, **115**, 66.
4 *Acta paediatr.*, 1945, **32**, 626.
5 Gordon, H. H., *Advances in Paediatrics*, 1947, **2**, 315. New York

TRAUMATIC AMNESIA

Transient loss of consciousness without physical after-effects is the common result of a head injury. The recovery of consciousness does not necessarily mean the full return of all cerebral functions. In the acute phase the cerebral paralysis involves motor, sensory, reflex, and mental functions. As is usual in the nervous system, recovery begins with the simplest mechanisms. Memory is the last function to return, and the total duration of the lapse of memory from the time of the injury—the period of post-traumatic amnesia—was regarded by Russell[1] as a measure of the severity of the injury. If the head injury is more than trivial it is not uncommon for recollection of the moment of the impact to be obliterated, but this retrograde amnesia rarely extends appreciably into the past life of the individual. Ritchie Russell and Nathan[2] have shown that the length of the phase of post-traumatic amnesia may indicate not only the severity of the immediate brain damage but also the future efficiency of the individual. This cerebral damage, which is entirely reversible with complete recovery in the mild cases and partial recovery in more severe cases, is not structural. In their work on experimental concussion Denny-Brown and Russell[3] found no histological changes. They felt that the term "cerebral concussion" should be reserved for this immediate functional paralysis of the neurones. The neuronal damage is attributed to a general shake-up of the brain inside the skull produced by a change

1 *Brain*, 1932, **55**, 549.
2 Ibid. 1946, **69**, 280.
3 *Lancet*, 1941, **1**, 371.
Ibid., 1943, **2**, 438.

in the acceleration, positive or negative, of the skull and an opposite movement of the brain. Denny-Brown and Russell inferred that this change in acceleration was linear, but Holbourn[4] has produced evidence that it is rotational, and his view is strongly supported by work undertaken by a research section of the U.S. Navy medical services with the "lucite" calvarium. A film of this research was shown in this country in 1945. That a change in acceleration, whether linear or rotational, is the cause of concussion can be seen if the results of "accidental" and "gun-shot" injuries of the head are compared. In the former group only 10% of 1,022 cases had no amnesia; in the latter 32% of 200 cases had no amnesia. This is presumably due to the failure of small high-velocity missiles to concuss the brain as a whole, though the focal damage may be intense.

Amnesia following an injury is relatively easy to understand. During the period of unconsciousness and confusion events fail to register. In retrograde amnesia the injury intervenes to blot out memories which have already been acquired. During recovery the retrograde amnesia will often shrink from months or days to a few minutes. Recovery is always chronological, those memories nearest the injury being the last to return. The importance of the memories has no effect on this sequence except that occasionally a "vision" of some event within the period of amnesia indicates that some vivid form of mental registration, though it cannot be voluntarily recalled, can reproduce itself from a relatively low level in the form of a vision. Here the injury may have blocked the process of retention half way. Russell and Nathan's observations suggest that remembering is a dynamic process in which the neuronal circuit patterns responsible for memories become more strongly emphasized with time. The longer the pattern has been established the more strongly does it resist not only the generalized disruptive neuronal shake-up called concussion but also the intellectual impairment occurring in degenerative states such as senility.

MASCULINIZING TUMOURS OF THE OVARY

Masculinizing tumours of the ovary have for many years afforded a fascinating subject for study by clinicians and laboratory workers. Yet neither clinical manifestations, hormone assays, histological appearances, nor chemical analyses have, separately or together, completely solved the problems of histogenesis, classification, and differential diagnosis; and our knowledge of the factors underlying sex differentiation remains incomplete. One of the difficulties is illustrated by a recently reported case[1] in which, despite masculinizing stigmata, including baldness, caused by an ovarian tumour of the adrenal type, the urinary excretion of 17-ketosteroids was within normal limits. The author suggests that either androgens in large amounts are not always necessary to produce masculinization, or our means of measuring them are not yet sufficiently refined to be reliable.

Characteristic of the lack of definite knowledge is the confusion which surrounds the neoplasm of the ovary which has been variously designated "masculinovoblastoma," "masculinizing tumour of the ovary of the adrenal type," "virilizing lipoid tumour of the ovary," "ovarian adrenal rest tumour," "ovarian hypernephroma," "masculinizing luteoma," and "luteinoma." The origin of this tumour is thought by most workers[2] to lie in adrenal rests in the ovary. This theory is supported by the close embryological relations between the gonads and the adrenal cortex, and by the finding by Novak[3] of islets of typical adrenal cells near the ovarian hilum in two cases which showed no manifestations of virilization. Other workers,[4] appreciating the histological similarity of the tumour cells to paralutein cells, have postulated a luteal origin; and this view has been supported more recently by evidence that progesterone may under certain conditions exert an androgen-like action.

On the other hand, the features of the other masculinizing tumour of the ovary, the arrhenoblastoma, have been more sharply delineated. This type of tumour is held to originate in male-directed cells persisting in the ovary from the early stages of gonadogenesis. In a recent survey of the subject Iverson[5] reports a case which may provide the missing link between these two types of tumour. The histological features of this case were the intimate association of adrenal-like tissue with typical arrhenoblastoma in the same tumour, and the identification by cytological studies of the cells of the adrenal-like tissue with the so-called interstitial cells found in the arrhenoblastoma. After a critical review of the generally accepted theories of histogenesis of the two types of tumour the author assembles considerable evidence in addition to histological features in support of his contention that the two tumours are very closely related and that the ovary is their common source of origin. Further evidence on this point is necessary, but this theory of Iverson is attractive, if only because it obviates the necessity for injecting the theory of adrenal rests into the histogenesis of ovarian tumours.

[1] Douglass, M., *Amer. J. Obstet. Gynec.*, 1947, **53**, 190.
[2] Rottino, A., and McGrath, J. F., *Arch. intern. Med.*, 1939, **63**, 686
[3] *Amer. J. Obstet. Gynec.*, 1938, **36**, 840.
[4] Glynn, E., *J. Obstet. Gynaec. Brit. Emp.*, 1921, **28**, 23.
[5] *Surg. Gynec. Obstet.*, 1947, **84**, 213.

RHEUMATISM IN SWEDEN

The incidence of acute rheumatism varies in different parts of the world, and it is of interest therefore to consider the course and prognosis of the disease in different countries. A considerable amount of work has been published on these problems as they appear in Great Britain and the U.S.A., and it may be claimed that we know the broad pattern of the clinical course taken by acute rheumatism in these countries. Similar information from other regions has hitherto been lacking, and a recent study of the disease in Sweden by Jacobsson[1] helps to fill this gap in our knowledge. He has presented an exhaustive follow-up of 689 children treated at the Children's Hospital, Gothenburg, during the years 1922–40. The follow-up was very successful, for 655 of the whole group were traced. As would be expected, the maximum incidence of the disease was found to occur between the ages of 7 and 11 years, but studies in this and other hospitals of Gothenburg showed that of 1,991 cases of acute rheumatism the first remembered attack occurred after the age of 20 in about half. This observation differs notably from those made in Great Britain, where, for instance, Coombs found that about three-quarters of the cases started before the age of 15. The mortality and the risk of relapses were found to be higher the younger the age of onset, a finding which of course agrees with those of previous workers.

Discussing the prognostic significance of different clinical features of the disease, Jacobsson confirms the generally held opinion that the prognosis is bad when clinically recognizable pericarditis and subcutaneous nodules are present. It is well known that a varying degree of anaemia is associated with acute rheumatism, and he shows that its severity is a useful guide to both the immediate prognosis and the risk of subsequent relapses. What does not accord with previous observations is his finding that the occurrence of erythema annulare was as bad an omen as the development of subcutaneous nodules. He was un-

[1] *Acta paediatr.*, 1946, **33**, Suppt. 7.

able to show that tonsillectomy had any effect on the course of the disease whether it was performed before or after the first attack. Since doubts have recently been expressed about the exact relation of chorea to acute rheumatism he made a special study of the course of the disease in children with chorea as an initial or main manifestation. He found that these children showed no significant difference from the others, and concluded that chorea must be regarded as a major manifestation of rheumatic fever.

In Britain the incidence and severity of acute rheumatism have progressively declined during the last 40 years, which we are apt to attribute to the general rise in the standard of living. In Sweden, on the other hand, Jacobsson found no change in the incidence of the disease from 1922 to 1940, though he did note a significant decrease in its severity during that period. While admitting that this may be due to an alteration of the "genus epidemicus," he considers that the real cause is to be found in better and more efficient treatment as a result of earlier admission to hospital and longer rest in bed and care. Thus it is seen that, while in Sweden the natural history of acute rheumatism is broadly similar to that in Britain and the U.S.A., there are interesting differences of detail which should be studied similarly in different countries with varying climatic and social conditions.

NEEDLE BIOPSY

The attempt to obtain pathological material for histological diagnosis by some means short of open operation is a laudable one, and established techniques are already available for diagnostic puncture of the bone-marrow, the spleen, and the liver. Martin and E. B. Ellis[1] applied a similar technique to the biopsy of tumours, and other authors[2-10] have since reported favourably on their method. Frank Ellis[11] has now performed some hundreds of biopsies by a puncture method, and has obtained approximately 60% of useful results in tumours of glands, bones, and thoracic and abdominal viscera. He uses the term "aspiration biopsy" to describe the insertion of a needle into the tumour and the withdrawal of neoplastic material by syringe suction. "Drill biopsy" is an elaboration of the method, a cannula being driven into the tumour by the rotation of a dentist's drill. This affords more delicate control than does manual puncture.

Precise histological diagnosis is necessary before starting the treatment, and particularly the non-operative treatment, of malignant disease, and there need no longer be any fear that, in general, biopsy of a tumour hastens its spread.[12-14] The melanoma and the neurofibroma are perhaps the only tumours which have been clearly shown to become more malignant after partial surgical removal; to these may perhaps be added the mixed tumour of the parotid, which at least grows more rapidly, if it does not undergo malignant change, after incomplete ablation. While the dangers of biopsy have been exaggerated in the past, there are certain disadvantages which are probably greater with aspiration than with open operation. Aspiration does not threaten the health or life of the patient (Ellis reports only four serious complications in his series), but inadequacy of material or the failure to obtain representative material may lead to faulty histological diagnosis. This is particularly true of bone sarcoma, whose variegated histology may include within a single tumour a range of mesoblastic tissue from virtually normal bone to highly anaplastic sarcoma; even open biopsy may secure from an undoubtedly malignant tumour only benign tissue.

The clinician's duty to the pathologist is to obtain at biopsy the largest possible amount of representative tissue, and this duty cannot always be discharged by an aspiration technique. It is seldom that open biopsy cannot be undertaken safely. Possibly the only clear indication for "aspiration biopsy" is in the case of a tumour so superficial, especially in the neck, that an open wound would offer a prospect of external fungation.

1 Martin, H., and Ellis, E. B., *Amer. J. Surg.*, 1930, **13**, 169.
2 —— —— *Surg. Gynec. Obstet.*, 1934, **59**, 578.
3 —— —— *Treatment of Cancer and Allied Diseases*, 1940, **1**, 72.
4 Ferguson, R. S., *Amer. J. Surg.*, 1930, **12**, 507.
5 Coley, B. L., Sharp, G. S., and Ellis, E. B., ibid., 1930, **13**, 215.
6 Stewart, F. W., *Amer. J. Path.*, 1933, **9**, 801.
7 Binkley, J. S., *Amer. J. Cancer*, 1939, **36**, 193.
8 Sayago, C., *Amer. J. Roentgen.*, 1942, **48**, 78.
9 Iversen, P., and Roholm, K., *Acta med. scand.*, 1939, **102**, 1
10 Ottolenghi, C. E., *Radiologia*, 1943, **8**, 288.
11 Ellis, F., *Brit. J. Surg.*, 1947, **34**, 240.
12 Marzloff, K. H., *Johns Hopk. Hosp. Bull.*, 1923, **34**, 141.
13 Haagensen, C. C., and Stout, A. D., *Ann. Surg.*, 1942, **116**, 801.
14 Paterson, R., and Nuttall, J., *Ann. J. Cancer*, 1939, **37**, 64.

AMNIOTIC GRAFTS FOR BURNS OF THE EYE

Sorsby and others[1] recently described the results of treating burns of the eye by the application of amniotic-membrane grafts, and in 1946 Sorsby and Symons[2] published an account of their technique. The results indicate that it is a valuable method of treatment in suitable cases. Sterile, fat-free, dry amniotic membrane is used. Amnioplastin, as it is called, is supplied by the London Hospital in 1-in. (2.54-cm.) squares consisting of four layers of membrane. This is a convenient size to use if upper and lower parts of the conjunctiva are damaged, while it may be folded to half that size if only the lower part is to be treated. Conjunctival tissue is not removed, and the operation is carried out under local analgesia after preliminary treatment of the eye with penicillin drops. The dry membrane is secured by No. 0 silk sutures—inserted through each corner—and attached to the bulbar conjunctiva so as to separate it from the palpebral conjunctiva. Not more of the cornea should be covered than is necessary, and the graft is trimmed accordingly. Both eyes are bandaged for 48 hours, by which time the graft is clear and hardly visible The sutures are removed on the third or fourth day, when the graft will have disappeared by absorption.

This simple operative procedure has been found of great benefit in limiting the after-effects of burns of the eye, especially if applied the same day as the accident, but it is also of value if used days later. It is indicated particularly in burns of the second degree. Burns of the first degree can be treated satisfactorily in other ways, and burns of the third degree—with necrosis or blackening of the conjunctiva—are better treated by excising necrosed tissue and replacing it by mucous-membrane grafts, as described by Denig and Siegel. In many cases treated by amniotic-membrane grafts the red and roughened conjunctiva became of nearly normal colour and smoothness in 48 hours, without any ulceration, as shown by absence of staining with fluorescein drops, and there was less tendency to complications affecting the cornea. In some instances where in the course of recovery from a burn there was a tendency for adhesions to form between the eye and the eyelid, the application of an amniotic membrane graft eliminated this tendency, and the result was evident in 48 hours.

Details of 30 cases are given and 28 in a previous publication referred to. Lime, sodium hyroxide, ammonia, and acids were among the substances causing the burns, which in a few cases involved the whole eye and in most cases the lower half of the eye. The results show that good vision (6/6 to 6/12) was maintained in nearly all the cases, and the description of individual cases makes it clear that this method of treating second-degree burns of the eye can produce remarkable improvement of the damaged conjunctiva in 48 hours.

1 *Brit. J. Ophthal.*, 1947, **31**, 409.
2 Ibid., 1946, **30**, 337.

THE MINISTER'S REPLY EXAMINED

A POINT-BY-POINT COMMENTARY

The Council of the British Medical Association has examined in detail the Minister of Health's reply to the Negotiating Committee's case. We print its analysis below.

"The task now before the profession is to strip the non-essentials from the essentials, to distinguish between the shadow and substance."—From the Statement by the B.M.A. Council, Dec. 18, 1947.

What does the National Health Service Act of 1946 actually *say*? What is the gloss which the Minister's statement puts upon the Act? The profession is advised to distinguish carefully between the two.

No Compulsion to Join?

The Minister prefaces his reply to the representations of the Negotiating Committee with some general comments couched in persuasive if misleading language and "addressed to the individual doctor," possibly in the hope of separating the individual members of the profession from those who represent them. "Any doctor," he assures the profession, "can participate in the scheme or not, just as he thinks fit. There is no compulsion whatever." Yet, once a free medical service available to the whole community is operating, only by State payment can the great majority of general practitioners hope to live. But there is no compulsion to join. One can stay out—and starve! The Minister adds that the doctor can participate "partly so and partly not," whereas the actual choice before the doctor is to join—and to give up the ownership of his goodwill and take a basic salary—or not to join and to be unable to accept a single public patient.

Will the Doctor be a Civil Servant?

"The word 'service,'" the Minister adds, "is perhaps a misnomer," having himself included the word in the description of his Act. "The doctor is not under orders," he says, though perhaps he should have said "not *yet* under orders." "The doctor is not employed," the Minister continues, whereas the Oxford Dictionary defines "employ" as "to use the service of." "He is not a Civil Servant," the Minister adds. Worse—he will be under the administrative control of the Civil Servant, medical and lay. Nor will he be a whole-time officer; he will be a part-time salaried officer; and the size of the salary element of his remuneration can be changed at any time by the Minister by regulation.

Then the Minister passes, with some alacrity, to the subject of remuneration. If a doctor takes on 4,000 *potential* patients under this scheme his gross income from "public funds," the Minister states, would be £3,300. How many doctors will have 4,000 persons on their lists? Each doctor can answer this for himself by dividing the population of his area by the number of general practitioners practising there. To-day the general maximum for insured persons is 2,500, and the average number on doctors' lists is about 1,000. It may be expected that under the new Service the average number of persons on a doctor's list will be just over 2,000. This average will decrease as the number of general practitioners increases. Remuneration in this case will be about £1,816. This is, perhaps, a better illustration of what the remuneration is likely to be. Deducting only 33⅓% for practice expenses, these figures become £2,200 for a maximum list and about £1,200 for an average list.

How Much Work Will it Mean?

The burden of a full list will be very considerable. The effect of introducing a free-at-the-time service is of course an increase in the number of items of service. National Health Insurance trebled the number of items of service. If the annual rate of items of service per person at risk remains as low as the present figure for insured persons, a list of 4,000 persons will need more than 20,000 items of service a year. This means, allowing a fortnight's holiday, just over 400 items of service a week. At a six-day week this means about 70 items of service a day. Of course these will not be evenly distributed over the year. It will probably mean over 100 items a day for twenty weeks of the year and between 60 and 70 items a day for thirty weeks.

"In addition," the Minister goes on, "he may have private fees from other patients; other public or private paid appointments; additional fees for undertaking maternity work; mileage allowances, allowances for training assistants, and other extras." What he does *not* say is that the post of district medical officer will disappear; the post of public vaccinator will go; and the posts of Post Office medical officer and police surgeon will probably undergo contraction and eventual disappearance. Nor does the Minister mention that mileage allowances are no more than payments for travelling expenses and time spent—the greater the mileage allowance the smaller the doctor's list; that for those who undertake midwifery under the Service it will be well-nigh impossible to take on a full list; that in most areas private practice will be virtually non-existent. Yet the Minister says quite hopefully that in addition to the remuneration for a full list there will be remuneration from those other sources! "'O come into my parlour,' said the spider to the fly!"

In his section on "distribution" the Minister assures the profession that consent will be refused only in those *few* areas where there is clearly no need for additional public practice. If so, why create an administrative mountain to bring forth an obedient mouse? If the areas are so few, then why is he proposing a vast scheme of licensing of all incoming doctors before they can practise in the public service anywhere? "No doctor can be directed," the Minister says. But any doctor can be prevented from entering the public service in any area.

No Attempt to Justify the Basic Salary

A remarkable feature of this preliminary piece of Ministerial "public relations" is that there is not a word in it to justify the decision to make a basic salary an element in the remuneration of every general practitioner. First the basic salary was to be large; then it was to be small; then the Minister said that it was something "he had had in mind," implying that it was no longer "in mind." Now it is clear what he has had "in mind" throughout. Of course, a good case can be made out for a guaranteed minimum for a young practitioner in certain circumstances, as for the payment of additional inducements in specially difficult areas. *But for the universal basic salary no arguments whatever are put forward.* It is not surprising that the profession regards it as the first step to a State salaried service.

Some of these preliminary paragraphs are too good to be true, too rosy to be even plausible. Beneath all the Ministerial varnish the Act still stands, and in proceeding to examine the Minister's memorandum his assurances must be related to the Act as it is now worded. *If there is one thing that is plain it is the Minister's blank refusal to amend the Act in any shape or form.*

THE MINISTER'S STATEMENT AND THE ASSOCIATION'S COMMENTS

Points from the Minister's statement (in italic) are given below with the Association's comments.

The Minister states that he has never excluded—and does not now exclude—the possibility of amending legislation being found desirable. The discussions have not convinced him of any sufficient reason to go to Parliament now (Para. 3).

For nearly a year discussions have been proceeding on principle and detail, yet the Minister remains unconvinced that there is the slightest case for amending the Act in any particular or any detail. What he alleges will be easy for him to do, *once the profession is in the Service*, he cannot or will not do now.

The Minister finds no conflict between the seven general principles of the profession and the Act (Para. 5).

Let us examine the Act in relation to just two of the principles.

Principle 1: The medical profession is, in the public interest, opposed to any form of service which leads

directly or indirectly to the profession as a whole becoming full-time salaried servants of the State or local authorities.

The Minister insists on general practitioners receiving part-time salaries from an agency of the State. He can at any time, by regulation, increase the proportion of remuneration which is salary. He can, by regulation, convert it entirely into salary. Yet he argues there is no conflict.

Principle IV: Doctors should, like other workers, be free to choose the form, place, and type of work they prefer without Governmental or other direction.

In future general practitioners will not be free to choose their place of work. They must first get permission from a Government committee—even sons and daughters who desire to join their fathers in practice!

Distribution

The Minister maintains and seeks to justify the machinery of the Act. He argues that no doctor should have the right to demand publicly remunerated work, implying throughout that a main consideration is one of public finance.

If doctors were remunerated by capitation fee, the individual doctor would be paid only in so far as the people of the area thought he was necessary. His success or failure would be determined by the people. The Government's total commitment would remain the same, and the choice of patients would determine the distribution of the public remuneration.

Earlier the Minister argues that the essence of the difference so far as general practitioners are concerned is just that they will be paid by public funds instead of by private fee. Now he argues that because the doctor is paid by public funds he cannot choose the area of his practice. One begins to see a reason for the universal basic salary. The Minister insists on a basic salary where it is unnecessary and then argues that because he is paying a basic salary to everyone, then everyone should in future obtain permission before entering an area for public practice.

The Minister denies that the Medical Practices Committee will have a bigger burden than it can efficiently discharge, saying that apart from a few areas its consent can usually be given automatically by a committee which will keep itself informed as to the needs for new public practice or replacements.

The Act provides that every general practitioner who seeks to enter the public service in any area must first get permission—that the Medical Practices Committee must in every case satisfy itself that the doctor is needed. The idea that committees in London and Edinburgh can, even with the advice of local executive councils, remain acquainted with the varying conditions of medical practice in every part of the country is a bureaucrat's dream.

The Minister's reference to the chain of circumstances when a doctor dies illustrates his lack of acquaintance with the difficulties. "If a doctor dies," he says, "and his representative wants to appoint a locum . . . this can be authorized." But why should a representative want to appoint a locum? When a doctor dies his widow becomes entitled to a very modest pension. Her interest in the practice and its maintenance ends.

The Minister fails to prove that a system of universal licensing is necessary to deal with what he now admits are a few cases of "underdoctoring."

The method of extra inducement, coupled with the almost unlimited powers of the Minister under Section 43 of the Act to make appropriate arrangements in areas where medical or other services are inadequate, provides the Minister with ample means to fulfil his obligations.

On the subject of limiting a doctor's area of practice, the Minister's reply is that "It will not have the effect of stopping a patient from crossing some imaginary boundary line to consult a doctor (as the Negotiating Committee seem to think) because the Medical Practices Committee will be asked to make any such refusal only a refusal of consent to the carrying on of surgeries or centres in a specified part of the area."

Compare this statement with the Act: "The Medical Practices Committee may refuse any such application on the ground that the number of medical practitioners undertaking to provide general medical services in the area or part of an area concerned is already adequate . . . the Committee may grant an application subject to conditions *excluding the provision of general medical services* by the applicant in such part or parts of the area of the Executive Council as the Committee may specify."

It will be the duty of the Medical Practices Committee to carry out the Act, not the Minister's reply.

Ownership of Goodwill

The Minister has a closed mind on the subject of the purchase by the State of the goodwill of the general practices of those who enter the Service.

Existing Partnership Agreements

Here lies the acid test of the Minister's intentions on the subject of amendment. Under Section 35 (4) of the Act there are described three kinds of transaction which are deemed to involve sale and purchase of goodwill and so to be illegal. The first two refer to circumstances in which something is paid by one partner to another for considerations other than work done; the third where a partner receives more than his services are worth. There then follows a so-called proviso which excludes certain transactions from the definition. The Minister says that this proviso excludes *all* existing partnership agreements so that they remain in full operation after the appointed day. Our legal advisers say that the proviso excludes only *some* partnership agreements—those where a partner is paid more than the value of the services he renders.

Certainly Mr. Key, then Parliamentary Secretary to the Ministry of Health, did not know what the proviso meant, for all he said in moving its addition was as follows: "This Amendment applies to assistant agreements. It is the same principle as that applying to partnerships."

At first sight this might seem to be a mere legal quibble. But our legal advisers regard the matter as one of great importance, and Sir Cyril Radcliffe, K.C., and Mr. J. H. Stamp, having had long experience in the interpreting of legislation, are not men to use words lightly. They write as follows: "If Sections 35 and 36 are allowed to become operative without amendment the profession and the Ministry alike will labour under embarrassing uncertainty on matters of great importance until the debatable matters have been finally adjudicated upon, and in the meantime steps may have been taken on the footing of a construction which is ultimately found erroneous with unfortunate consequences to all concerned. In our opinion it would involve a real hardship to the practitioners concerned if they were required to submit to such uncertainty when it has been clearly foreseen and can be removed by an amending Act."

The Minister makes no attempt to refute the arguments put forward by our legal advisers, merely stating that if he is found to be wrong after the appointed day he will introduce legislation to make his interpretation the right one.

He expects the members of partnerships to decide whether or not to enter the Service without knowing whether in fact the rights and obligations in their partnership deeds are nullified by the Act. He leaves the whole position vague and ambiguous. Soon a dispute will arise and it will be left to individual practitioners to incur the expense of taking the case to the House of Lords. If the Minister's interpretation is found to be wrong and he, or his successor, carries out his promise of introducing amending legislation, the position will be clarified for the future, but nothing can be done to rectify the steps partners have already taken in fulfilment of their agreements.

Such ambiguity having been demonstrated, surely the profession is entitled to have it removed before individuals are called upon to decide whether or not to enter the Service.

The position is even worse, for our legal advisers give as their opinion that *the Minister's own interpretation is inconsistent with the Act.* For example, the Act requires him to pay interest annually on the compensation due to individuals and, for reasons Counsel give in full in their opinion, the Minister will be unable to carry out this requirement. The Minister replies by claiming that his solution is equitable. But the Negotiating Committee raised the point not as one of *equity* but as one of *law.*

Again, the Minister's own interpretation means that where a practitioner in the Service is in partnership with a practitioner

not in the Service the former may be called upon—under the partnership agreement—to purchase a private practice in respect of which no compensation is provided under the Act; the latter may be called upon to buy a public practice the income of which he cannot secure without joining the Service, so sacrificing the capital value of his own share and the one he has had to buy. The compensation which the public practice would otherwise have attracted is forfeited to the Treasury. The Minister's solution is ingenious. To the extent to which the practitioner not in the Service but called upon to buy a public practice is mulcted of money which to him is a complete loss, to that extent there is money left in the compensation "kitty" to pay compensation which is not authorized by the Act. The Minister counts on the proceeds of expropriation to relieve him of the necessity for amending the Act so as to pay compensation not provided for by the Act in its present form.

The Doctor's House

The Minister assures the profession that a doctor's widow who puts up her house for auction, whoever may buy it, is not committing an offence.

His statement needs to be compared with the words of the Act, which defines as an offence, without excluding the procedure of the auction sale, the selling of a house to an incoming practitioner at a price "substantially in excess of the consideration which might reasonably have been expected if the premises had not been used for the purposes of a medical practice" (Section 35 (3)).

When it suits him the Minister argues that the Act is for the Courts and not for him to interpret. But when he is seeking to allay professional fears he does not hesitate to produce an emollient interpretation of the Act even if a simple straightforward reading of the Act proves him to be wrong!

Remuneration

Whatever the form of service, the range of remuneration of general practitioners is governed by the report of the Spens Committee, which the Minister has accepted in principle. For the profession to stand out for amendment of the Act will not affect the range of general practitioner remuneration.

An examination of the Minister's proposals reveals some interesting features:

The central pool will receive 18s. in respect of 95% of the population for two years only. Therefore, remuneration should be examined on the 95% assumption.

The more general practitioners who enter the Service as principals the greater the number of basic salaries to be paid and the less the capitation fee.

Conversely, the smaller the number of general practitioners who join the Service, the larger the capitation fee.

Nothing has been heard of the tapering capitation fee since the publication of the White Paper. It now returns in a new form. The remuneration for the first 1,000 patients works out at a capitation fee of 21s. 2d., the remuneration for every additional person on the list being 15s. 2d. if 17,900 principals join the Service, 15s. 3d. if 17,500 join, 15s. 4d. if 17,000 join, and so on. It will be seen from the figures given in para. 27 of the Minister's reply that the effect of the basic salary is to reduce the average payment per patient from 21s. 2d. for 1,000 patients to 16s. 8d. for a list of 4,000 patients. The basic salary of £300 a year will be paid to every general practitioner entering the Service, "subject to conditions to ensure that some reasonable minimum number of patients is accepted by such doctors within a reasonable period." The basic salary, it seems, is to be paid on the assumption that those who need it should not need it for long. The great majority of practitioners do not need it at all. The only argument ever used by a member of the Government in support of a universal basic salary is the one used by the Lord Chancellor in the House of Lords when he argued that the salary method was needed for the control of certification.

Comparison with Spens

Does the proposed remuneration square with the recommendations of the Spens Committee? That Committee recommended in net figures and in terms of 1939 money values the following spread of professional remuneration:

75% of general practitioners should obtain over £1,000 per annum.
50% of general practitioners should obtain £1,300 per annum or over.
25% of general practitioners should obtain over £1,600 per annum.
Slightly less than 10% of general practitioners should obtain over £2,000 per annum.
A few general practitioners should obtain at least £2,500 per annum.

The betterment factor used by the Minister in the recent increase of the current insurance capitation fee to bring 1939 values up to current values was 30%. If this low figure is applied to the Spens recommendations we get:

75% of general practitioners should obtain over £1,300 per annum.
50% of general practitioners should obtain £1,690 per annum or over.
25% of general practitioners should obtain over £2,080 per annum.
Slightly less than 10% of general practitioners should obtain over £2,600 per annum.
A few general practitioners should obtain at least £3,250 per annum.

(These are *net* figures.)

In order to make these figures comparable with the Minister's present proposals, it is necessary to convert them into figures of gross income. If this is done, on the assumption that expenses amount to one-third of gross practice receipts, the Spens recommendations take the following form:

75% of general practitioners should obtain over £1,950 per annum.
50% of general practitioners should obtain £2,535 per annum or over.
25% of general practitioners should obtain over £3,120 per annum.
Slightly less than 10% of general practitioners should obtain over £3,900 per annum.
A few general practitioners should obtain at least £4,875 per annum.

(These are *gross* figures.)

How do the Minister's proposals compare with the Spens recommendations? The comparison is exceedingly difficult to make, though one or two calculations are suggestive:

According to Spens, 50% of the profession should receive a gross income of £2,535 or more a year.

The average number of insured persons on a doctor's list is at present approximately 1,000.

If 95% of the community use the new Service the average number is likely to be rather more than 2,000.

Thus the average income of insurance practitioners, taking the Minister's figure for a list of 2,000 patients, will be £1,816 gross (or approximately £1,200 net).

The average income for the "middle group," according to Spens, should be £2,535 gross. Although the average income is not necessarily equal to the middle income, the size of the margin between £2,535 and £1,816—£719—suggests that, even allowing for the Government contribution to superannuation, the Minister's proposals do not wholly fulfil the Spens Committee's recommendations in the middle ranges.

Again, slightly less than 10% of the profession should, according to Spens, receive over £3,900; yet the practitioner with the maximum on his list will receive only £3,332. This means that no practitioner in the public service devoting the whole of his time to that Service can possibly achieve the level of remuneration recommended for 10% of the profession. To reach the level of £4,875 recommended for the few is out of the question.

It cannot be pretended that an exact comparison between the Spens recommendations and the Minister's scale is possible at this stage, but it seems possible that the middle and certain that the higher ranges of remuneration recommended by the Spens Committee will not be achieved by the Minister's proposals.

Right of Appeal to the Courts

The Minister rejects the request of the profession.

This is the one point upon which the Minister was defeated in the Committee stage. He states that any other situation would be impossible. So the position remains that medical practice can be made virtually impossible for a medical practitioner whose name appears on the *Medical Register*, without his having the elementary right of appeal to the Courts. In the Northern Ireland Health Service Bill a practitioner aggrieved by any decision of the tribunal is given the right of appeal to the Courts.

Hospital and Specialist Services

The position remains that the Minister is empowered to establish a hospital monopoly. True he states that he would normally exclude nursing-homes "subject to hearing any views of the appropriate Regional Hospital Board"—a qualified promise which may or may not be adhered to by his successors. Further, he promises, "where circumstances make it possible, to allow a proportion of the available private beds to be used without any prescribed maximum charge." He accepts or agrees to consider a number of other points of detail put forward by the Negotiating Committee. But the Act is to stand untouched. His assurances are not binding on his successors. If the Minister does not intend to take over private nursing-homes, or private hospitals, why does he insist on retaining the power to do so in the Act?

To the extent to which Section 4 accommodation is developed, it will be possible for the Minister or his successors to make private practice impossible. In short, while the Act remains as it is the Minister's assurances can be reversed at any time in the future. The danger of a State monopoly of hospitals still remains.

LOCAL HEALTH AUTHORITY SERVICES

Health Committees

The Minister states that he has no powers of compulsion—and would not wish to seek such powers—to ensure that local health authorities co-opt to health committees members of the medical profession.

The Act requires local health authorities to appoint statutory health committees and to refer to them all matters relating to the discharge of their functions under the Act. The new committees are comparable in many ways to the statutory Education Committees, which are required to co-opt persons experienced in education. But the Minister refuses to ensure that Health Committees shall co-opt persons experienced in health.

Decentralization of Local Health Authority Services

The Minister was asked to provide compensation for county district medical officers of health who lose a major part of their present work and status as a result of schemes for the decentralization within a county of local health services. This applies particularly to the medical officers of those areas which are losing maternity and child-welfare functions. The Minister, in his reply, has ignored the effects of the Act on the position of these officers.

GENERAL

The Minister recognizes in his closing paragraphs that the "medical profession is actuated in the ultimate resort solely by its professional concern in the welfare of the men, women, and children whose care it undertakes. . . ." Part of this professional concern in the public interest is to ensure that the medical profession retains its independence, for it knows that it cannot give of its best work to the public if its members, losing their independence, become salaried officers of the State. The Minister insists that general practitioners shall no longer own the goodwill of their practices; that they shall become recipients of basic salary paid by the State; that they shall set up in public practice in an area only with the permission of a committee established by the State; that the Minister shall retain the power to create a hospital monopoly and to render independent specialist practice difficult or impossible.

In the view of the medical profession these developments are plainly intended as a first step towards the goal which the Minister has publicly espoused—that of a whole-time salaried service for the medical profession. To use his own words, he will pluck us for his purpose when we are ripe. We owe it to the public, to our traditions, and to the medicine of the future to resist this grave threat. The medical profession of this country is ready and willing enthusiastically to co-operate in a comprehensive medical service which will secure for every member of the community the best that medicine can offer. But it would be betraying the public interest tamely to submit to changes which, unnecessary to the main objective, would deprive the public of the services of a profession which is responsible not to the State but to the public itself.

In the long run the independence of medicine is no less important to the country than the independence of the judiciary. What the Act of Settlement secured for the judges is being swept away two centuries later for medicine, under the influence of a contemporary political fashion.

THE PLEBISCITE

There will be issued to every member of the profession on Jan. 31, 1948, a plebiscite form. If a sufficient majority of the profession confirms the view which is here expressed and vote accordingly, the medical profession will be advised not to accept service under the Act in its present form. The profession will be asked to accept the verdict of the majority if that majority is of sufficient size. Whatever the result, no doctor will be advised not to render service to his patients or not to continue with his professional work. The position is well summed up in the statement which the Council of the Association has already issued:

"If the profession decides against service consultants and specialists will be advised to continue with their hospital work, meanwhile refraining from entering into contract with regional hospital boards; general practitioners will be advised to continue with their practices but without entering into contract with local executive councils; public health officers will be advised to continue with their work under local authorities. Parliament has given to every doctor the right freely to enter or not to enter the Service. Indeed the Minister, in his reply, draws attention to this right. The medical profession, while never willing to withdraw its services from the public, is fully entitled to say that the State Service offered is, in its considered view, opposed to the best interests of the public and the profession.

"The task now before the profession is to strip the non-essentials from the essentials, to distinguish between the shadow and the substance. Despite the Minister's promise that if convinced he would seek amendment of the Act, he has remained unconvinced and impervious to argument, and thus for nearly a year we have worked at the conference table to no purpose.

"There remains one final question and one central issue. Does the Service as described by the Minister conflict with the traditions and standards of a great profession? There is only one answer the Council of the Association can give to this question. It does so conflict."

Conclusion

Parliament has given every doctor the right to decide whether to enter the Service or not to enter it. The Minister of Health has agreed that the profession is entitled to decide the question collectively as well as individually. Indeed, it is obvious that in such a matter, which is of the highest professional and national concern, doctors, like other workers, are entitled to look to their leaders for guidance.

The British Medical Association now offers such guidance. It does so neither lightly nor recklessly but after prolonged study of all the issues.

Firmly believing that the National Health Service as at present constituted will undermine the independence which in all ages medicine has needed for its work, and that it is therefore contrary to the interests of both patients and doctors alike, the British Medical Association recommends the medical profession to give expression to this view in its votes in the forthcoming plebiscite.

RESOLUTION BY REPRESENTATIVE MEETING

The following resolution was carried by the Special Representative Meeting on Jan. 8:

The elected Representatives of the medical profession in Great Britain and Northern Ireland, meeting in London this 8th day of January, 1948, solemnly declare that in their considered opinion the National Health Service Act, 1946, in its present form is so grossly at variance with the essential principles of our profession that it should be rejected absolutely by all practitioners.

PHYSICAL EDUCATION IN THE NATIONAL HEALTH SCHEME

A five-day conference on remedial gymnastics was held under the auspices of the Ling Physical Education Association in London in the first week of the New Year. An intensive programme of lectures, demonstrations, and visits was carried through. The opening address was given by Dr. Harold Balme, medical officer in charge of rehabilitation, Ministry of Health, whose subject was the place of remedial gymnastics in the National Health Service scheme.

Remedial gymnastics, said Dr. Balme, started in this country as a means of dealing with congenital deformities and postural defects. Its emergence into a wider field was due largely to the report of the B.M.A. Committee on Fractures, which recommended the development of fracture clinics and the use of rehabilitation methods, particularly remedial gymnastics, in dealing with industrial injuries. Similar recommendations were made in 1936 by the departmental committee of inquiry into arrangements for the restoration of the working capacity of persons injured by accidents. During the recent war remedial gymnastics extended into a still wider field, including the treatment not only of orthopaedic disabilities but of any disorder, whether medical or surgical, which might lead to permanent disablement.

In the proposed National Health Service remedial gymnastics had a vital part to play. Any child born with a deformity should receive continuous gymnastic guidance during school life and later. There were now some 300 hospitals in which the general idea of rehabilitation had been accepted to the extent of allocating separate departments for this work and appointing rehabilitation officers, remedial gymnasts, and occupational therapists. In the future the remedial gymnast must work in children's clinics, where he—or more often she—would be able to deal with deformities and postural defects. No remedial gymnast, said Dr. Balme, need fear that under the new scheme she or he would not find an important place.

Postural Defects

The programme of lectures and demonstrations at the conference included a lecture by Prof. A. B. Appleton on feet and posture and several demonstrations on the remedial treatment of postural foot defects in school-children. Dr. F. S. Cooksey, director of the physical treatment department at King's College Hospital, spoke on postural defects of the spine. Severe structural scoliosis was a problem ten years ago, but comparatively few cases were seen to-day. There were, however, a large group of cases of round back or kyphosis. This condition started early in childhood, and if it was to be remedied physical education must begin in the nursery. In modern orthopaedic books there were many pages on scoliosis, but the antero-posterior curvature of the spine was largely disregarded. The condition often arose in debilitated children, and in adolescence was often associated with impaired respiratory function. He thought that this condition of lordosis had frequently been missed in school medical examinations because while the front and back of the child were inspected no regard was paid to the sideways position, in which the abnormal curvature became apparent.

The disorder was a progressive one. He thought that many such cases might be explained by the frequency of cold and feverish conditions in young children. They were kept in bed for a day or two, but as soon as the temperature subsided they were allowed to get up; and then, owing to weak muscles, they tended to adopt the "slump posture," which became habitual. The child with adenoids and persistent toxic absorption from the nose and throat quickly became fatigued. The spine came out still more with the wedging of the vertebrae, and the round shoulders, "slump posture," flat pectorals, and long dorsal kyphosis became permanent. The problem was one of physical education in the widest sense. Any eye trouble should be corrected, for some of the slumping might be attributed to visual difficulty at the desk. Faulty breathing should be corrected. The child's environment should be studied, and he should be examined at work and play, and particularly when he was tired. Adequate rest, not on an arbitrary basis but according to the needs of the individual child, should be enjoined. If a child got to secondary school age with a round back nothing could correct the real evil, namely, the bony change, though it was true that the appearance could be improved by exercises which encouraged proper muscular tone and carriage.

THE CHILD IN INDUSTRY

The Conference of Educational Associations which was held in London at the beginning of January included a discussion arranged by the Medical Officers of Schools Association, when the subject of the transition from school to industry was introduced by Dr. T. Lloyd Davies, an industrial medical officer of Nottingham. Dr. R. E. Smith (Rugby) presided.

Dr. Lloyd Davies said that 280,000 boys and 270,000 girls entered industry (using the word to include all profitable employment) between the ages of 14 and 17 in 1946. In industry, as compared with school life, the young person found the hours longer, with fewer breaks, the work more monotonous, and the supervision less close. The nutrition of the child was apt to suffer with the end of school meals and milk, and there was likely to be an excess of carbohydrates in the diet. By the time the child entered industry he had come to the end of his second big spurt in the rate of growth. At about the age of 14 boys began to be taller and heavier than girls, who up to that age had had the advantage in these respects. The raising of the school age would make a considerable difference to the state of maturity in which the majority of young people entered industry.

Speaking from his own experience as an industrial medical officer, Dr. Lloyd Davies described "the pathetic scraps of humanity" who sometimes presented themselves for employment—undeveloped physically and in every respect. For some rather obscure reason children who applied for work in offices were on the whole graded higher on intelligence tests than those who applied for work in factories. These children were much more sophisticated than the public-school group; they came from a less well protected environment, and sometimes they had questionable values and standards. They were often difficult, being shy and suspicious, but if handled properly their response was whole-hearted. When there were defects in the home it was not uncommon to find these children on the verge of social delinquency. Their reading matter often consisted of journals devoted to love or crime or both, sometimes with advertisements having an unpleasant sex appeal.

If these children were to be asked what they sought in employment it would be found that most of them were out for a safe job. This was a repercussion of parental unemployment in the 'thirties. It created a deep impression in the family when the father was out of work, for if ineffective from the economic point of view he was likely also to be ineffective from the social and disciplinary point of view, and the psychological balance of the family was upset. Some of the children were more concerned about those with whom they would have to work than about the nature of the job itself; with others it was the reverse, and doubtless there were intermediate grades. In repetitive jobs girls were more at home than boys, being more skilful in escapism, usually an escape to love fantasies and the making of a home of their own. Many boys could not stand repetitive jobs, and this dislike might be reflected in high accident rates or in strikes. Dr. Lloyd Davies reminded the meeting that in one year 32 boys and 4 girls under 18 were killed in factories and mills, and 21,000 boys and 7,000 girls injured to such an extent as to necessitate absence from work for more than three days. Of machine accidents, 16% involved the injury of persons under 18.

The fact remained that the vast majority of children in this country must make the transition from school to industry, the period of growth from childhood to adult life being passed partly at school and partly in industry. Educationists began the job of training them for citizenship, and industry had the responsibility of creating the conditions under which development in that direction was completed. He welcomed the Education Act, 1944, in that it made possible a prolongation of school discipline and oversight into a later period, so that the transition at a critical time in the life of the growing child was made less abrupt and involved less peril for the future.

MEDICAL PRACTITIONERS AND PHARMACISTS ACT

REGISTRATION PROCEDURE

The Ministry of Health issued the following statement on Jan. 5:

Medical practitioners in this country possessing only foreign qualifications who were temporarily admitted to the British *Medical Register* under wartime arrangements have for some time past been concerned as to their future after the termination of temporary registration on Dec. 31, 1947. The Medical Practitioners and Pharmacists Act, 1947, which received the Royal Assent on Dec. 18, defines their position after that date. Under this Act the General Medical Council is empowered to grant permanent registration to such practitioners subject to certain conditions, the most important of which are the production of evidence of satisfactory service in a medical capacity while temporarily registered, residence in the United Kingdom otherwise than for a temporary purpose, and the submission of satisfactory evidence of their medical qualifications if they were not required to produce it at the time of temporary registration. Applications for permanent registration are required to be made to the Council within six months of the passing of the Act and during that time temporary registration continues. Doctors temporarily registered under the Polish Resettlement Act, 1947, are also covered by the new measure.

Four Categories

Provision is made in the Act for the medical registration of several categories of medical practitioners qualified abroad and not already temporarily registered who are now resident in this country otherwise than for a temporary purpose. They are:

(1) Practitioners with service overseas in H.M. Forces (including H.M. Dominion Forces, Indian Forces, and Burma Forces); in any voluntary organization operating in connexion with H.M. Forces; or in a civilian medical capacity in territories within the Empire during the carrying on of war operations or enemy occupation or the continuance of circumstances arising therefrom.

(2) Doctors who were permitted to enter or remain in the United Kingdom before Aug. 4, 1947, owing to war circumstances.

(3) Doctors who came (or may subsequently come) to this country under the Polish Resettlement Scheme and have failed to secure registration under the Polish Resettlement Act by the date (Dec. 31, 1947) when registration under that Act was due to expire, though otherwise eligible for registration under the Act.

(4) Graduates of the Polish School of Medicine, Edinburgh.

Registration in the case of (2), (3), and (4) is provisional in the first instance and conditional in the case of (2) and (4) upon the practitioner being selected for employment in a hospital or other institution approved by the Minister of Health or the Secretary of State for Scotland, and in the case of (3) upon the fulfilment of the conditions for registration laid down in the Polish Resettlement Act, i.e., employment for the medical care of the Polish Resettlement Forces or other employment approved by the Minister or Secretary of State.

The time for submission of applications under (1)–(4) is twelve months from the passing of the Act.

Forms of application for registration and full instructions will shortly be obtainable from the Registrar, General Medical Council, 44, Hallam Street, London, W.1, to whom inquiries should be addressed on all matters other than the Departmental approval of hospitals or other institutions for the purpose of the Act or registration under the Polish Resettlement Act. Inquiries on these particular points should be addressed to the Ministry or Department of Health for Scotland.

The opportunity has been taken in the new Act of regularizing, by a permanent provision, the position of doctors qualified abroad who come here for a temporary period—eminent practitioners coming to give demonstrations of their skill in particular branches of medicine (usually at teaching hospitals) or postgraduate students. Registration in these cases will be temporary only, conditional upon employment in a hospital or other institution approved by the General Medical Council and limited to such employment. Inquiries should be addressed to the General Medical Council.

Pharmacists with Foreign Qualifications

Another permanent change in the law effected by the Act enables the Pharmaceutical Society to register pharmacists qualified abroad either without examination and compliance with normal requirements as to training and study, or subject to such modified examination and other conditions as they think proper. This replaces an existing provision limited to holders of "Colonial" Diplomas whom the Society were empowered to register without examination. Pharmacists qualified abroad who are temporarily registered under the Defence Regulations are eligible for consideration. In the meantime, their temporary registration continues for six months from the passing of the Act.

Preparations and Appliances

A SPRAY DEVICE FOR SURFACE ANALGESIA

Dr. A. OWEN-FLOOD, Hornsey, writes: The attainment of effective analgesia of the pharynx and larynx, and especially in the more extensive preparation for bronchoscopy, is seldom easy and, as evidenced by the obvious distress of many patients undergoing the ordeal of this trying examination, not always successful.

Adequate analgesia of the more accessible structures like the mouth, pharynx, and fauces requires no great effort or skill, but the larynx, epiglottis, vocal cords, and trachea, protected as they are by the shelving parts of the tongue base and the powerful reflexes guarding these vital channels, call for a more expert technique.

Two main difficulties are here encountered. The patient making every effort to resist invasion of the foreign bodies—

the spatula (which is invariably too short) on his tongue and the liquid spray down his throat—renders the view of the larynx imperfect and the saturation of the whole area with the analgesic solution a hit-or-miss affair. The "saying 'Ah!'" technique, by which prolonged exclamation the patient exposes deep structures, is well enough in itself if there is uniformity in its performance by all patients, but experience shows that it can vary from a faint mouse-like squeak to a bellow.

I have chosen Macintosh's laryngoscope for the spray attachment illustrated, because it lends itself more readily to the adaptation than the other makes, allowing a full illuminat

view of the epiglottis and vocal cords, at the same time exerting an even pressure on the whole surface of the tongue. It also steadies that organ and holds it firmly out of the line of vision.

The tongue-piece is composed of two thin plates through which is tunnelled a fine-spray nozzle which emerges about an inch (2.5 cm.) from the end of the spatula, at a point where it curves slightly downwards. This position gives a maximum spread to the spray, allowing also a quantity to dribble and desensitize the lingual surface of the epiglottis and the vallecula. At the rear end of the tongue-piece the spray tube joins a small metal cylinder in a gentle curve, to avoid coming into the line of vision, and to render clearing its stuffed lumen by nylon thread a simple operation should it be necessary.

The cylinder is composed of three parts—a lid containing the spray mechanism and inflator apparatus, the body to which it is screwed in an air-tight joint, and its glass-lined container charged with the analgesic solution. Cleansing is facilitated and corrosive action by this agent is thus prevented.

The surface analgesia, thanks to the excellent properties of the laryngoscope, becomes smooth and comfortable for the patient. With a few squirts into the mouth the tongue-piece can be passed without gagging, and an adequate analgesia is obtained with all structures in view. With fair relaxation of the vocal cords some of the agent can be sprayed directly down the trachea, thus avoiding the necessity for the injection of the liquid agent direct into the larynx by piercing the crico-thyroid membrane—an operation distressing to the patient as well as hazardous.

Reports of Societies

MENSTRUAL DISORDERS IN RELATION TO GENERAL MEDICINE

The last Hunterian Society meeting of 1947 was devoted to a discussion of menstrual disorders in relation to general medicine. Mr. ALEX. E. ROCHE presided.

Mr. ALECK W. BOURNE, in opening, excluded from the discussion disorders due to general pelvic conditions. Where there was no local disease he believed that the majority of manifestations of menstrual disorder, whether amenorrhoea or excessive loss or pain, were due to disturbances of function of the anterior pituitary. How the anterior pituitary exercised such a varied function was one of the biggest problems in medicine. In conditions of anxiety, grief, and fear the gland seemed to go wrong, as was shown by its gonadotrophic action on the ovary. Certain cases of amenorrhoea were clearly associated with emotional disturbance. How was it that the anterior lobe could be disturbed in the absence of any ascertainable hormonal influence? He supposed that the effect of emotional distress on the function of the gland must be explained by the influence of nerve fibres coming down the pedicle from the thalamus, but that only put the problem one stage further back. He believed that the function of the lobe was so strongly under the influence of mental and emotional conditions that it was sensitive to all that a woman feared and equally to all that exalted her. He understood, too, that at least fourteen hormones had been found to be derived from the cells in this tiny lobe of the sella turcica.

Dr. EDWARD SHARP described a small series of cases seen in general practice. Eight cases of spasmodic or intrinsic dysmenorrhoea had not responded to hormone treatment, a general tonic, and advice about fresh air and exercise. Then he had a talk with each patient, trying to persuade her that her dysmenorrhoea did not mean that she was abnormal, and that she must not allow it to "get her down." This was more effective: one patient was much improved and apparently cured, and three others were improved to the extent that it was no longer necessary for them to stay away from work at the monthly period; the remainder were no better. His second group consisted of eight cases of amenorrhoea and oligomenorrhoea; some of them improved after treatment with stilboestrol.

His third group consisted of eight cases of metrorrhagia and menorrhagia, and in seven the condition occurred towards the end of reproductive life. Four had volunteered the information that their loss was always very much heavier when they were emotionally upset, and five of them had a very unsatisfactory emotional background.

One of these women had been saddled with an ungrateful and unsatisfactory father-in-law, entailing a great increase in her work and threatening to come between her and her husband. He was eventually disposed of, and her periods returned to normal. Another was a woman who was in continual anxiety, separated from her husband, and engaged in work which she thought beneath her but which was necessary for the support of her family. So far her periods had been unaffected by any sort of treatment. Another was a woman aged 42 whose husband developed tuberculosis of the spine and whose daughter made an unsatisfactory marriage. Her husband was now very much better and she was improving without treatment. Another woman, aged 32, was anxious about her husband, who was a civil air pilot and absent for long periods. She was sterile, and here again treatment had no effect. Another was a woman aged 44 who had been twice married. Her second husband became a chronic invalid almost immediately after marriage, and the wife devoted her life to nursing him. He died after twelve years. During the last five years there had been no sexual intercourse, but the husband's invalidism was not such as to prevent him from taking a mistress, unknown to her, during the last eight years, a fact which the wife did not discover until she was a widow. After she recovered from her distress and anger she herself took a lover, and her periods had been regular ever since.

These cases illustrated the futility of treating metrorrhagia and menorrhagia as anything more than symptoms. It was significant that in five of these eight cases the husband loomed large in the picture, either owing to his absence or his actions. Happiness in marriage was closely related to normal menstrual function.

Mr. JOHN HOWKINS spoke of girls in the Services during the war who came up for treatment owing to menstrual disorders. He believed that the mothers of these young women had a good deal to do with their condition. They were apt to relate with sadistic delight what had happened to them, and a number of the girls were "auto-suggested" into dysmenorrhoea. He expressed some scepticism about the claims made for drugs in the treatment of these conditions. One disease which was of some interest in this connexion was tuberculosis of the genital tract. Attention had been drawn to the number of cases of sterility in which on diagnostic endometrial biopsy giant cells had been discovered. This question of tuberculosis of the endometrium was a very important one. It used to be said that when a woman who had pulmonary tuberculosis developed amenorrhoea or menorrhagia it was a sign that she had genital tuberculosis. It was worth while to draw attention to the possibility of tuberculosis of the genital tract.

Mr. V. B. GREEN-ARMYTAGE quoted some Biblical and Shakespearean references to menstrual trouble, notably the case of the woman with the issue of blood as described in St. Mark's gospel and certain passages in *Romeo and Juliet* and *The Winter's Tale*.

After some further discussion Mr. ALECK BOURNE, in reply, suggested that the completely happy individual, perfectly adjusted to environment, and exalted, could never be ill. Their trouble as physicians was that they could not prescribe the initial therapy—happiness—for all functional diseases. With regard to tuberculous salpingitis, a recent writer on the subject, in examining the biopsies of women who suffered from sterility, found that 4% showed giant cell systems. It might not be the true deduction that a giant cell in the endometrium necessarily meant tubercle, but it was the fact that tuberculous endometritis was much commoner than many thought.

The first ordinary meeting of the newly formed Medical Subsection of the Library Association was held at the National Institute for Medical Research on Jan. 2. Welcoming the seventy or more members and guests, Dr. C. R. Harington, the director of the Institute, spoke of the increasingly important part played by library services in the modern world and of the invaluable aid that specially trained librarians could give to those engaged in medical practice and research. Dr. G. Popjak gave an illuminating talk on recent developments in nuclear physics and their medical applications, and Miss Ethel Wigmore described the work of the library. A conducted tour followed, and the visitors displayed a special interest in the system of indexing current periodical literature and reprints.

Correspondence

National Health Service

SIR,—At Wimbledon on Jan. 4 Dr. Guy Dain spoke of the impossibility of making the plebiscite legally binding.

May I presume to put forward a proposal that will achieve the desired effect which, if we vote against the N.H.S., is of tremendous importance in dispelling the fear of being in the minority?

When we receive our Ministerial agreement we sign it but leave blank the decision. These papers are then collected by group representatives (if necessary by personal application) and a note also made of papers not collected. The B.M.A. Council would then hold all papers collected, and if our majority were sufficient would stamp them as not entering the scheme and deliver them *direct* to Mr. Bevan. If our majority is not sufficient the papers are to be returned to their owners.

This would prevent all fear of revoking between our plebiscite and the official Bevan ballot, and if made known early enough would bring more votes of "no" into the plebiscite figures, since it is applicable to specialists and G.P.s alike.—I am, etc.,

Haslemere, Surrey. R. MILTON.

SIR,—If the majority of us G.P.s are opposed to the National Health Service Act and if we refuse to join the Service, surely the Act cannot be worked and an amendment will be forced. Assuming a majority against the Act, our weakness lies in our lack of team spirit. We are not sure of the strength of will of our colleagues in other parts of the country. We fear that a trickle into the Service may increase to a rapid flow, followed in the end by a landslide.

I suggest that as a part of the questionary the profession be asked: "If you are opposed to the Service as it stands, and if X% (say 60) are of the same opinion, will you *bind* yourself to refuse to join the Service until acceptable terms are agreed by the Negotiating Committee?" If 60% bound themselves thus, our minds would be greatly relieved, and the arm of the Negotiating Committee would be immensely strengthened.—I am, etc.,

Sidmouth, Devon. G. H. GIBBENS.

SIR,—A year ago the last B.M.A. plebiscite made it clear that the profession held a majority opinion against this Act as it stood, but on the intervention of the three Presidents the profession agreed to set aside the effects of that plebiscite, to induce the Minister of Health to lay more of his cards on the table, and to get the Act amended. After a year's delay there has been no amendment of the Act. Surely, therefore, the verdict of the last plebiscite still holds? And if we must have another, why must we be rushed into it within a month? As the Minister has kept us guessing for a year why should we not keep him guessing for six months and hold our plebiscite in June?

We have had issued to us a manifesto by the Minister himself "addressed to the individual doctor"—suggesting an attempt to drive a wedge between the general practitioner and the B.M.A.—which paints a superficially alluring picture of the new Service. But of what use is it our considering the allurements if, by accepting service under the Act and thus rendering our position irrevocable, we confer upon the Minister the power of absolute dictatorship from which there is no right of appeal ("It must be left to him in the last resort to decide . . ."—para. 28; and, "it would be impossible to combine this responsibility with *any lack of ultimate jurisdiction* . . ." (my italics)—para. 70)? This would enable the Minister or his successor(s) to rescind any or all the terms of service once his power was established, and we should have no redress whatsoever.

Until and unless the Act is so amended that an appeal can be made to the High Courts of Justice against any decision of the Minister, discussion of details of the Act is surely not only utterly futile but highly dangerous.—I am, etc.,

St. Germans, Cornwall. W. H. SPOOR.

SIR,—The Minister of Health has now clearly revealed his intentions, and it is up to the profession to act decisively. Our only weapon is a majority decision to refuse to enter the new Service, but individual doctors cannot be expected to do this without complete confidence that the majority of their colleagues are doing likewise. In order to ensure this confidence I propose that the Secretary of the B.M.A. should send to every member of the profession the following two documents. The first should be addressed to the Minister of Health and should be signed by all doctors agreeing to the scheme and should be undated, and then returned to the Secretary of the B.M.A. Subject to revision by legal experts it should read somewhat as follows:

"I (Dr. X), being in active practice as a general practitioner, or consultant, or employed by a hospital or local authority in a full-time capacity, or being retired, do hereby inform the Minister of Health that I refuse to accept service under the National Health Service Act, 1946.

"This document must be taken as cancelling any previous application to serve under the Act that I may have signed.

"Signed, Dr. X."

The second document should be addressed to the individual doctor concerned and should be signed by the Secretary of the B.M.A. and should give him a solemn promise that the preceding document, if signed by him and returned to the Secretary of the B.M.A., would not be used unless at least 50% of the entire profession were to sign and return similar forms before the closing date. It should also be required that at least 60% of the general practitioners should sign such forms, and that the forms signed by members of the special groups such as consultants (except those retired) should not be used unless at least 40% of the doctors in the same group had signed and returned similar forms. It should also be made clear that a doctor who had signed such a form would still be free in the meantime provisionally to accept service under the Act, but that such acceptance would automatically be cancelled if the above document were to be used, in the manner to be described, by the Secretary of the B.M.A.

Assuming that the above conditions were fulfilled, they should be retained by the Secretary of the B.M.A. until the closing date for applications, though the existence of the forms and their numbers could be made public. If the Minister remained impassive they would then be dated and delivered to the Minister on the closing date, and each doctor concerned would be individually informed of the fact by the next morning's post.—I am, etc.,

Newport, Mon. G. W. HOARE.

SIR,—Many like myself must have a profound feeling of dissatisfaction at the results of the negotiations between the Minister of Health and the B.M.A.—dissatisfaction both with the results, which amount to *nil*, and with the fact that these negotiations were allowed to drag on for so many months while the profession was kept in complete ignorance of what was happening behind the "iron curtain." The impressions formed are that the Minister of Health was gaining time on his side and that the B.M.A. was at fault in submitting to such a prolonged period of negotiation when it was obvious, as the results prove, that no headway was being made. These results now circulated to the profession could surely have been arrived at in as many weeks as it has taken months. Can there be any reasonable explanation for this delay?

I am sure there is a growing feeling of dissatisfaction against the "kid-glove" methods of approach to the Minister of Health by the B.M.A.

Many of Mr. Bevan's statements are very misleading, especially to the general public. One such statement, that doctors are entirely free to join the Service or remain out of it, is very misleading. The "pistol" is at our heads and we are asked to "sign on the dotted line" and give up our freedom, or not to sign and give up our possibilities of making a living.

If we are compelled to accept service under the Act as it now stands in order to make a living, probably the greater percentage of doctors will enter the Service under protest and with a disgruntled feeling. It seems a pity that Mr. Bevan has shown so little consideration for the principles which the profession has aimed at maintaining, not with any ulterior motives

and that he has missed the opportunity of appeasing our modest desires, which he could very easily have done and so ensured a Service with a satisfied and contented profession. My only conclusion is that statesmanship and understanding have been overruled by party political considerations by which we will be for ever controlled if we accept service under the Act.

One wonders if wholesale resignations from our present N.H.I. contracts might influence Mr. Bevan to change his mind as the threat of such resignations did on a previous occasion. There is little time left for such action, and it would require to be done without delay.—I am, etc.,

Newport, Fife. A. B. TAYLOR.

SIR,—The only reason for a plebiscite now is to confirm the previous decision. This can be done emphatically if :

(*a*) Non-members of the B.M.A. and members who do not read their *Journal* are reached by clear brief leaflets stating our aims and our objections to the Act, as it exists ; publishing the original Government policy—i.e., a full-time salaried Service, which obviously is still the Minister's ultimate aim ; and pointing out that he has the power to attain this with his dictatorial powers under the Act, and that there is no appeal against his decision.

(*b*) Doctors who find it difficult to decide, owing to financial reasons, are given details of the Fighting Fund, its source, and an idea of how it will be used.

(*c*) An answer is given to the many who say, "I would vote against it if I knew what my neighbours are doing."

(*d*) There is a guarantee that no agency or group will be allowed to trail another red-herring after the plebiscite, no matter how good their intentions.

(*e*) It is pointed out how a handsome capitation was offered to get doctors into N.H.I. in 1912 and how it was "adjusted" to less than 50% of that sum in due course. This bait is offered again with the significant sentence, "But in two years' time that position will be reviewed."

(*f*) It is pointed out that the silky "General comments of the Minister addressed to the individual doctor" were obviously not written by Mr. Bevan's pen. They remind one of Hitler's non-aggression pacts before invading a small neighbour. Neither was para. 71 of the Minister's report, which might have been written by a Florence Nightingale. It even promises amending Acts !

(*g*) Finally, the actual plebiscite paper is made simple and clear. (It is generally agreed the last one was misleading to many.)—I am., etc.,

Moseley. THOMAS J. CRONIN.

SIR,—Dr. E. Billing (Jan. 3, p. 25) writes, "The decision should be taken on the vote of private practitioners only (consultant and general), whose future is at stake," and gives a list of various publicly paid doctors whose "votes should not influence the issue." May I, a *retired* G.P., go further and say that the votes of retired men should for obvious reasons (political or family) be entirely left out of the count, as our future is not at stake and we can, so far as is possible, leave the future and the reputation of the profession in the hands of its acting members.—I am, etc.,

Crediton, Devon. E. PROTHEROE SMITH.

SIR,—The preamble to the circulated pamphlets of the Negotiating Committee's case and the Minister's reply asks the profession to study these preparatory to a plebiscite being taken. For this purpose preliminary and divisional meetings are being held for exposition and discussion. I think a serious error is being committed in not also circulating to the profession the exact terms on which a plebiscite will be taken.

The *terms* for the plebiscite are *all-important* ; they should be the subject of careful discussion by the profession and should be agreed by the profession before being sent out for voting. For instance, it may be impossible for a man to give an honest "yes" or "no" vote on whether he will serve under the Act as it now is. He could only do so if assured that action will only follow a unanimous decision. It is quite clear that there will not be a unanimous decision, and in this case a man standing to his vote of refusal to serve might well find himself faced with economic ruin. Such a strain on him would be intolerable and should not be required. It would be better for the plebiscite terms to be much weaker but capable of being carried out, otherwise an honourable man must abstain from voting. I would suggest that the plebiscite should include a vote that he would serve, but with disapproval of the offending clauses and intent to work for their amendment. The exact wording should be the subject of careful discussion. Such voting would have great weight because of its obvious integrity and as indicating that service would be given under durance.—I am, etc.,

Worthing W. O. PITT.

SIR,—The Minister's reply may be summarized as soft soap and personal promises. I do not believe he personally wrote the former ; the phraseology simply is not his ; and the promises are useless, for apart from any question of good faith he may be dead or dismissed to-morrow. The only thing that counts is the Act. The Act *in its present form* is anathema to us. The trap is wide open. Once we are in we are finished ; this is our last chance. Sell your practice (note the blackmail : no compensation if not in by July 5) and accept a basic salary (stated categorically by the Lord Chancellor as designed to control our certification), and you are a slave.

Certification ? What a thought ! What a weapon ! If we stop issuing certificates the whole machinery of the top-heavy bureaucratic mass stops dead as completely as the kingdom in the fairy story. "No amending Act : no certificates." Not a bad slogan, my brothers and sisters.—I am, etc.,

Devon. W. F. BENSTED-SMITH.

SIR,—Time is getting short. Overmuch has been said about some aspects of the National Health Service and insufficient about others. We still have no idea of what our income will be for the following reasons: (1) The rate of remuneration depends upon the percentage of population insured ; (2) the greater the percentage insured the less will be the number of private patients who can afford to pay us.

We still know nothing definite about compensation. Is it to be twice average gross of the last three years ? If it is for any earlier period then it amounts to capital appropriation, because no allowance is made for practice growth in recently acquired practices. For example, a panel practice is bought in 1945 and a private practice is built up in addition subsequently. Is the compensation only to be for the panel value in 1939 with no allowance for existing private income ?

The majority of practitioners in N.H.I. work must feel how much more satisfactory it is to treat private patients, because private practice is recompensed in proportion to output whereas N.H.I. work, hedged about as it is with irksome restrictions, leaves one with the feeling that one is constantly being imposed upon by the irresponsibles and neurotics.

I see that the Minister intends to arbitrarily decide what certificates must be issued free. I should hate to be dependent on his decision when I think of the numerous reasons for certificates arising out of rationing and control.

The present N.H. system, in which the doctor is under contract with the societies instead of dealing direct with the public as regards payment, is unsatisfactory enough. Why not seize the present opportunity to start afresh ? Follow the example of the medical profession in the Department of Var, S. France, where the doctor is paid direct by the patient, who is thus made to realize that service costs money and is not to be dissipated on aspirins and bromides. The patient then collects what he can from his society, which in turn learns to recognize the bad sheep in its fold and deals with them accordingly.

Substitute the Government for the society in this proposal and let matters take their course. The net effect of the compulsory levy of 6s. 2d. weekly, which all self-employed men, including myself, will have to pay, and the resulting experience of the scheme by the public will no doubt cause many second thoughts and result in an electoral kick in the pants for this or any Government which persists in it.

Are we going to be such fools as to voluntarily relinquish our present degree of freedom, and income of known dimensions, for more restrictions and absolute doubt about our future ?—I am, etc.,

Bournemouth A. R. THATCHER.

SIR,—A leading article in *The Times* on the new National Health Service discusses "a crisis in confidence" and suggests that the attitudes of both parties to the dispute are determined more by emotion than reason. Having carefully read the B.M.A.'s circular, Mr. Bevan's reply, your leading article in the issue of Dec. 20, 1947, and the letters in your issue of Jan. 3 I am forced to agree with *The Times*. For what are we asked by our leaders to do battle with Mr. Bevan and Parliament, risking each individual's financial future and the profession's reputation? What major issue are we asked to fight for? Your correspondents say that our freedom is in jeopardy, but not one of them faces squarely the fact that increasing organization can only take place at the expense of the individual's right to do what he likes. Surely the whole evolutionary process is in the direction of increasing organization. Are we to refuse to recognize this because we dislike the inevitable restrictions this process entails? Would it not be more dignified to take our part in the very difficult problem of organizing without destroying individual liberty and initiative?

Your leading article asks us to refuse co-operation on the grounds that Mr. Bevan is playing a confidence trick on us. In a few years' time we shall be forced to accept a full-time salaried service, we are told. Surely if any Minister were foolish enough to attempt this we should then have a major issue with the weapon of the strike in our hands. Should such a conflict ever arise we should have the public behind us, provided always that they have received a satisfactory service from us in the meantime.

Mr. Bevan appears to have gone out of his way to put our backs up. Many speakers on the B.M.A. platform have taken an unreal and intransigent line. We have heard appeals for a crusade against bureaucracy. This emotional conflict of personalities will get us nowhere and commands little support in the country. Recent by-elections have disposed of any illusions that the country can be roused against the present Government on a cry of "freedom *versus* bureaucracy." The average man sees that the two must somehow be combined. Let us make an important contribution to the solution of this problem.

If the profession persists in the policy advocated by the Negotiating Committee I foresee an ignominious repetition of the events of 1912.—I am, etc.,

Chipping Ongar, Essex. F. E. S. HATFIELD.

SIR,—While fully in agreement with Dr. L. P. Gray (Dec. 20, 1947, p. 1007) that direction of any labour is wrong, if as a profession we take industrial action to further political views, as distinct from sectional defence, as he appears to advocate in his recent letter to you, then, I submit, we should be ethically wrong and should be setting a very dangerous precedent.

Within our consulting-rooms there should be no politics. Outside our professional work let us be as forceful as we can in political activity. As doctors we have every right to sabotage the wishes of the majority, actual or alleged, when as competent and expert judges we consider those wishes bad for patients and for the profession, both of which we have the right to protect against all comers. Outside our special province we have no right to use the weapon of the sabot.—I am, etc.,

London, S.W.8. T. J. TAUNTON.

SIR,—I share with Dr. E. W. Vincent (*Supplement*, Dec. 27, 1947, p. 171) the concern he expresses about the inadequacy of the compensation provision. Even if the £66,000,000 was considered adequate at the time it was computed, it can hardly be so now, as the pound has fallen in value since then and it is impossible to foretell what it will be worth when compensation falls to be paid "on retirement or death."

Should this depreciation continue, a practice would normally fetch a higher price and make up for it; whereas compensation calculated as at the appointed day will remain fixed. This question is of vital importance to the G.P., who must be satisfied that he will not run the risk of losing his hard-earned capital if he enters the Service. We should insist that the Government pays when it buys us out. If it is contended that the country cannot afford to spend so much money at this time, it is further proof that this is not the moment to introduce such a costly service, the success of which is by no means certain.—I am, etc.,

Musselburgh, Midlothian. JAMES SHARP.

SIR,—In the *Supplement* of Nov. 1, 1947 (p. 100), a report of the Ophthalmic Group Committee appears in which it is stated that in the view of the Ministry of Health there was no case for the compensation of specialists for their practices for the reason that, "in so far as consultant and specialist practices might continue to be bought and sold, the National Health Service Act would not prevent the continuance of this custom." If this refers to "State" practices, it is, to say the least, a very curious anomaly. If on the other hand it refers only to private practices, the fallacy in the argument is obvious.

On receiving the report of the Negotiating Committee I naturally expected to find some clarification of this position. It appears, however, that this cynical disregard of the elementary principles of equity is not considered of sufficient importance to be worth a mention. Nor is the matter mentioned in the Minister's statement, from which one would gather that all doctors who elect to join the Service on the appointed day will receive compensation.

The report of the Negotiating Committee is stated to give all the information at present available. It is only to be assumed, therefore, that this matter, in common with most of the regulations, etc., concerned with the specialist services under the Act, is still under discussion. If this be the case, it is surely premature to hold a plebiscite before every member of the profession has had an opportunity of studying the complete regulations of the Act in their final form.—I am, etc.,

Plymouth. P. R. GREEVES.

SIR,—In the *Journal* of Sept. 7, 1946 (p. 342), you were good enough to publish a letter in which I tried to show that the essential difference between the Minister of Health and ourselves was one of policy rather than of principle. No one attempted to refute my argument at the time, and I refer to it because your able leader (Dec. 27, 1947, p. 1037), together with the Council's statement (p. 1046), appear to confirm my contention, for it is because the National Health Service Act is regarded as "the first and irrevocable step towards a whole-time State service" that we are invited to refuse service under the Act.

Socialist policy has always included a whole-time State service, and in 1945, when the present Government was elected on a clearly defined Socialist programme, many of us expected, and feared, that the new National Health Service would be according to plan and were astonished and relieved when Mr. Bevan's Bill proved to be merely a pale pink edition of the measures introduced by his predecessor, which, be it remembered, was an essential part of the Beveridge Plan accepted by all parties.

I am not a Socialist, and I loathe the idea of a whole-time State service, but it is advisable not to allow the violence of our emotions to interfere with the clarity of our thought. It is unfortunate that so few people recognize the fact that we are living in a period of revolution, as real as those of France or Russia, happily unaccompanied by the bloodshed and expropriation which disgraced them, but every whit as real. The party which now rules us has not lost a by-election, has nationalized the banks, the mines, and the railways in spite of all opposition, yet we are invited by our leaders to oppose a Government which has triumphed thus far because it has taken "the first step" towards nationalizing our profession. Has the B.M.A. Council forgotten King Canute and Mrs. Partington?

The Minister has promised that he will amend such portions of the Act as are found to be unworkable and asks us to co-operate with him in working it on those terms. As an alternative to the recommendations of the Council, with all respect, I venture to suggest that we take him at his word. The Defence Fund has ample funds to pay the expense of taking a test case to the House of Lords, and if one may judge from letters in the *B.M.J.* there should be fierce competition among the fire-eaters for the honour of being the principal figure in the case.

Section 36 (2) suggests that the Minister estimates that about 18,000 practitioners will be necessary to work the Act. Assuming that he has obtained that number of signatures on the appointed day, he will find himself in the position of being legally liable to

provide free medical attendance on about 45 million people and dependent on those signatories to enable him to fulfil his contract. If we co-operate with him, within a year or two we shall be in a very powerful position, for even a Socialist Minister of Health cannot suddenly create several thousand medical practitioners to enable him to meet his obligations. Panel practitioners have proved at least twice that it is possible to combine and force a Minister to listen to reason, and the power of the profession in the N.H.S. will be far greater than in National Health Insurance.

Few appear to remember 1911 and 1912. Everything that has been said against the N.H.S. Act was said then against the N.H.I. Act—everything. And in those far-off days of freedom Lloyd George's Act seemed even more revolutionary than Bevan's does to-day. The B.M.A. put up a great fight and won five rounds out of six, and 27,000 men signed pledges not to take service "except on terms in accordance with the Association's policy." The Council then, as now, thought that the profession could successfully oppose an Act of Parliament and held out hoping to win the sixth round—and there was a general breakaway. Then we had a powerful Press and a large section of public backing us; to-day we have neither.

It is absurd to suppose that the profession is as united now as it was in 1912: the last plebiscite is evidence of that. In the questionary of 1944, 24,538 men and women took the trouble to answer forty questions, some of which are the crucial points to-day. More than one-third were in favour of payment by basic salary plus capitation fees. More than one-half expressed their opinion that the measure of "direction" proposed was reasonable and that the sale and purchase of practices should be abandoned. Is it likely that all these people have changed their minds? Nothing new has been said by anybody to induce them to do so.

Let us face facts. The Minister has at his disposal the sum of £66,000,000 with which to compensate for the loss of the sale of the goodwill of their practices those men and women whose names are on the lists of Executive Councils on the appointed day, and those only. How many of us can afford to take the risk of losing his or her share of this? We know that few of us can do so, and, however fine it may be to reflect on and talk about the "traditions and standards of our great profession," most of us have to earn our living in order to practise it, and that stark fact is the basic reason why we cannot refuse to serve.

None of the disasters predicted in 1912 materialized, and we made the National Health Insurance Act a success, a benefit to the public and to the profession, and it is because of my long experience in that service that I am convinced that we shall be able to serve in the National Health Service without sacrificing any of our standards or being false to our traditions.—I am, etc.,

Buckfastleigh, S. Devon. SYDNEY R. WILLIAMS.

SIR,—The most obvious way to defeat the machinations of the Minister of Health is to reduce as soon as possible the number of practitioners who have no vested interests. I would suggest that all present practitioners and firms in partnership who are anxious to maintain the *status quo ante* do their utmost to take a partner and make him or her a "Have" instead of a "Have-not." Mr. Bevan is relying on the latter in the main to implement the Act. It is worth while making some pecuniary sacrifice to deprive him of his recruits and safeguard the future of the general practitioner and the public.—I am, etc.,

Great Yarmouth. LEONARD LEY.

SIR,—After a careful study of the Negotiating Committee's statement and the Minister of Health's reply, together with the Press (medical and lay) reactions over the week-end, one is still left in a somewhat perplexed state of mind. The *Lancet* comes out with the advice, "Trust the Minister," and makes the plain statement that because in the past we have sponsored the cause of medical reform the possibility that the profession will in the end refuse to take part in the N.H.S. is virtually buried, though concessions may be necessary before it commits itself. How these are to be secured from a Minister who has proved himself so stubborn in the past and believes he is going to be victorious ultimately is not stated.

The *British Medical Journal* on the other hand, having led us to believe (Panel Conferences, reports, etc.) that the Negotiating Committee had presented an unanswerable case, feels slightly hurt that the Minister made no conciliatory gesture by offering to make the smallest amendment of the Act. Much was made of Sections 35 and 36, but what does it all amount to when the Minister makes it clear that if at a practitioner's expense a costly court case proves his interpretation of the sections wrong he would "take steps to introduce legislation to restore his original intentions"?

Two points occur here. The first is that no suggestion is given that the B.M.A. would or could bring a test case to relieve some practitioner of colossal expense; and the second, did the Negotiating Committee beg the Minister to omit *pro tem.* contentious clauses so that the Act could be operated in a "favourable atmosphere" and be made "the success which both they and he want it to be"? What we have in these documents is the presentation of two answers to the same problem—viz., can the N.H.S. be made to work well? The Minister says there are no difficulties about it given good will. The B.M.A. says no, it cannot, since the sacred principles are still violated.

As the *Daily Telegraph* said, the position is one of stalemate. Is it surprising that the practitioner is puzzled when one paper proclaims that this Act will make the medical profession the best paid in the country, while yet another informs us that to take in 4,000 units the doctor would have to be an athlete, a road hog, and as expeditious as lightning. One feels therefore that the Council of the B.M.A. should give us the inside facts to help us make up our minds. Surely the least we could expect is the immediate printing in the *Journal* of the verbatim account of the final discussions with the Minister. Did he present the velvet glove discernible in the Memorandum, or was the iron hand employed? Frankly, much of the difficulty arises because no one completely trusts Mr. Bevan—his intransigent attitude, his great powers under the Act, and his ability as a side-stepper are too well known. On the other hand, we should like to judge whether the Negotiating Committee properly presented their cast-iron case. Only the fullest and early publication of what was said can enable the rank and file to instruct their Representatives at the S.R.M. on Jan. 8.

On closer examination of the documents no light is shed on (*a*) hours of work, (*b*) holidays, (*c*) provision of locums during unavoidable absence—e.g., sickness—(*d*) formation of a liaison body like the I.A.C. unless such is adumbrated by 26 (8). All these points are of importance before deciding what the remuneration amounts to.

Compensation.—Surely it is not the normal procedure in business when one party's interest in a business is acquired by another to defer payment till retirement or death. Did the Negotiating Committee press for a speedy payment of capital values so that the doctors could invest at better rates than 2½% if they so wished or could buy their own annuity or at least make it negotiable? What, for instance, would be the position of a doctor who is dismissed from a 95% service? Would his compensation and superannuation be paid or would they be forfeit? If the latter, the effect would be to make practitioners more subservient to an all-powerful Minister. On this matter of expulsion the *Lancet* naively suggests that we should be "satisfied" with the Minister's proposal to set up an advisory committee instead of the right of appeal to the courts, "but only if members of the Service remain perpetually alert in the cause of professional freedom and ready to defend it at all levels. As with so much in this Service, the remedy here lies with ourselves." Is this a polite suggestion that, like the proletariat, we might stage a lightning strike occasionally? If doctors are not prepared *now* to insist on what the Panel Conference has already declared advisable, what possible chance is there of Ministerial puppets doing anything drastic?

Remuneration.—We should like to know how the figure of £300 basic salary was arrived at. With the sliding scales proposed it is very difficult to calculate what one's income would be. The unknown factors are (*a*) what proportion of the population would elect for panel doctoring, (*b*) the number of doctors who would either willingly or unwillingly take part. The figures (17,900) are misleading, as my information is that there are 21,000 general practitioners available plus 2,000 aliens who could come on the *Register*. If all these take part the capitation fee will fall badly. Here again one wonders if any attempt was made by the Negotiating Committee to get a fast rate fixed so that reasonable calculation could be made of one's expected income and help decide whether the N.H.S. offer was an economic proposition in each case.

Working things out on the figures given, this is what one urban practitioner's income might be, assuming a 95% service and a panel of 2,500. *Gross income:* £300+£1,895=£2,195. *Expenses* (approximate figures): Superannuation, £125; car (12 h.p., 12,000 miles yearly at 6d. per mile), £300; rental of surgeries, etc., £200; income tax on, say, £1,400 at average 8s. per £1, £560; rates on house, etc., £80. Total unavoidable practice expenses: £1,265. Net balance: £930.

With two children at school the position is not easy. If one child should wish to go to a medical school at, say, £360 per annum, it is quite impossible for another child to take up medicine as well. It would be a salutary measure if every medical practitioner would similarly work out his financial position from known expenses as for inland revenue returns.

Midwifery.—The position of the G.P. who sits in judgment on his colleagues' obstetrical ability is indeed an unenviable one. Why treat N. Ireland and Scotland differently from England and Wales in midwifery regulations?

Does all this correspondence mean that we have unequivocal grounds for giving a dogmatic "No" to the Minister? I doubt it. The Minister states he is not prepared to alter the Act before the new Service has been tested in actual operation and found to need amendment. Very well, let him try it out in, say, N. Ireland for a year or so. If it works there, well, we can all join in cheerfully.—I am, etc.,

Swansea. WILLIAM PARKER.

SIR,—At a meeting of doctors practising in Fleet and the surrounding districts to discuss the National Health Service Act it was unanimously decided that the Act should be rejected for the following reasons:

(1) The Act is unworkable because of the greatly increased demand on the practitioner by the minor sick and by certification, leaving him insufficient time for adequate treatment of the really ill.

(2) The Act deprives the doctor of his rights as a citizen by removing his right of appeal and his right to own and sell his practice. The direction of labour in any form should be regarded as a purely wartime measure and in peacetime constitutes an infringement of civil rights.

In view of the above facts it is suggested that, to avoid ambiguity, the wording of the plebiscite should be (*a*) Do you agree that the National Health Service Act should be accepted as it stands? Yes or No. (*b*) In the event of a majority answer to question (*a*) being "No," would you be willing to refuse to take service under the Act? Yes or No.

Unless we are prepared to fight this Act *now* and do more than grumble about its injustices, we shall find it thrust upon us and it will then be too late.—We are, etc.,

A. W. HARRINGTON. R. W. M. MORRISON.
R. L. HARWARD. R. H. SCOTT.
T. C. JAMESON EVANS. J. A. SHARKEY.
J. G. MATHEWSON. C. R. TILLY.

Fleet, Hants.

SIR,—It appears from your correspondence that all the virtues belong to the opponents of the Health Act, all the evils to its supporters. Whatever else the Act does it at least ensures that every newly qualified doctor may ultimately in his own right serve the community and practise without becoming involved in the complicated and pernicious system of borrowing large sums of money in order that he may so practise. Surely many who have had to purchase practices with borrowed money have felt anything but free to practise entirely according to the principles on which they were nurtured. The medical schools, to which we look for so much inspiration, have had little to say on the commercial aspect of medicine, which is curious indeed if it be such a cardinal point of ethical practice.—I am, etc.,

Luton, Beds. P. H. WOODCOCK.

SIR,—Negotiations of recent date, I feel, have proved farcical. One cannot make progress with a non-negotiating Minister. Certain features of the Act—too familiar now to bear repetition—are directly opposed to the profession's principles. What is to follow? Local meetings, study groups, and a plebiscite—and to what avail?

It seems apparent that meetings and the like will occupy us during the few months that remain before the appointed day. The ultimate plebiscite, then, may well show a high proportion of doctors opting out. And what will follow this? The Minister, like ourselves, is a realist and knows that, as the appointed day nears, few, opting out, will be able to ignore the forms inviting them to join the Service—and for simple reasons:

(1) The younger practitioners, with their heavy financial commitment of purchasing a practice and often a house, would be throwing away their panel lists and the compensation value of their goodwill; they would become bankrupt overnight.

(2) The middle-aged and established practitioner would too lose the value of his goodwill, the fruits of his labours for many years. He too may well have heavy financial burdens—a growing family and a mode of life commensurate with his status.

(3) The elderly practitioner: can he afford, near his retirement, to lose the value of his practice, to which he has devoted many years of his life?

It appears to me that all the courage and loyalty of a free profession cannot battle against these financial considerations, and many, opting out, will "sign on" to protect their family's well-being and their own livelihood. I consider that Mr. Bevan's ideas run on these lines. He once said in the House that doctors could remain outside his scheme (and with a laugh) if they can make a living! I do not think these views are defeatist that enable us to see the probable course of events—a complete loss of face, as we loathfully sign away our birthright of freedom to enable us to live, after vociferously denouncing the Service—a united and honourable profession laid low by one obstinate man, who then dictates, within his powers, to us all!

Our plan must be carried out now: we must carry the war to the enemy so that no longer do we find time is against us. Two alternatives come to my mind: (1) A large-scale resignation of panel doctors, pending true and real and earnest negotiation; (2) an ethical "strike" of panel doctors, during which time medical care and treatment continue as normally, but no incapacity insurance certificates and no death certificates are signed. This latter plan may well seem at first to "hit" the insured person if it continued for more than a week. Better by far, I say, hit and even hurt these people for a short while—and it would be a short while—than sentence the whole populace to be doctored by an unsatisfied, disgruntled, and fettered profession—for who knows how long.

The Minister would have to listen to our views again and this time perhaps with open ears and even an understanding mind. Perhaps to many this may all sound youthful, fanatical, and aggressive—indeed, it is—but its aim is not revolutionary or damaging: its aim is to show that at least one body of our people is prepared to fight for its rights and is not fooled by a seductive introduction to a scheme in a pamphlet. To have any chance of success we must act now, or I feel we will have failed miserably to adhere to our own professional code.—I am, etc.,

Birmingham. V. B. GOLDMAN.

SIR,—When the Negotiating Committee sat down with the representatives of the Ministry of Health to discuss the National Health Service Act we understood that they were to discuss both regulations and the possibility of an amending Act. We now have the reports of both parties before us, and, although they consider at great length the pros and cons of an amending Act, of the regulations, apart from the question of remuneration, they say practically nothing at all. There must be many like myself who voted "Yes" at the last plebiscite because we were not impressed by arguments about "principles" and wanted to see exactly where we should stand before we decided whether to join the Service or not.

As things stand we are being asked to make this decision without any idea of what it will involve. As far as one can see all that will happen on the appointed day will be that all our patients who wish to do so will become insurance patients. In consequence there is bound to be an enormous and even overwhelming increase in work. Many of our private patients who are now satisfied to come once every month or two will be attending weekly for certificates and repeat prescriptions. Mothers will bring their babies to us for their minor complaints instead of going to the welfare clinics, and the menopausal and neurotic will flock to our surgeries. All these will be perfectly within their rights and only demanding that to which they are reasonably entitled. Yet unless there are definite regulations to allow certification for longer periods than one week, to allow prescriptions that may be repeated at intervals, to arrange for free clerical assistance, to organize rotas for night work, week-ends, and holidays, and so forth, it will not be long before even the least work-shy among us will be breaking under the strain. What is more, those of our patients who are suffering from serious disorders will suffer from our being unable to give sufficient time to their care.

There are ways and means whereby this extra flow of work can be offset by better organization of medical practice. Health centres cannot be built overnight, but schemes for group practice could be an integral part of the regulations, and there must be many other ways in which your readers could suggest easing the burden. Meanwhile, I feel that no sane member of the profession engaged in general practice can vote for entering a service of this sort until he has some idea of what he will be called upon to do in it.—I am, etc.,

Margate. M. CURWEN.

SIR,—We are not told how our contract, under which we are responsible for the treatment of patients on our panel list, is to be discharged when the State Medical Service comes into force. Under normal circumstances, a panel doctor remains responsible for the care of his patients until the expiration of three months' notice given at the beginning of a quarter. The doctor is legally bound otherwise, unless he arranges an approved deputy or transfer.

Does the National Health Service Act discharge the present contract by operation of law? It would be well to get this clear. Unless this is so, a panel doctor will, on July 1, 1948, be legally bound to attend, for a further three months, all patients then on his list, unless he has given notice of resignation to the Insurance Committee not later than April 1, 1948. To give such notice on April 1, 1948, would be to deprive himself of the right to compensation in respect of his panel practice: he won't have a panel practice when the Act comes into force.

If the doctor did not give notice of resignation, and did not elect to practise under the Act, would it result, if an insufficient number of doctors joined the Service, in the panel doctor being compelled to attend to all or some of the patients then on his panel list, but being precluded from receiving remuneration out of public funds unless he enters into a new contract with the Minister?

As to the Act itself. May I take the opportunity of saying that, though not all doctors are in favour of the Act (and some of us are very much against the upheaval in the practice of medicine as we received it and have always known and regarded it), we must accept the fact that centralization and control are the ways of the world to-day. The Act is on the Statute Book. It would have needed a 100% outcry against the Bill when it was going through Parliament to have defeated the only thing in it which really matters—that medical practices are to be taken over by the State after a given date. We were not sufficiently unanimous as a profession to oppose it. Time may prove that opposition was wrong. It may be that the relief from financial burdens and obligations that most G.P.s saddled themselves with will enable the young practitioner to keep his mind on his job and give him a longer and happier life.—I am, etc.,

Hull. M. G. LUCAS.

SIR,—The Minister of Health's refusal to meet the profession in amending Sections 35 and 36 of the Act, despite the strong protest of the Negotiating Committee backed by prominent legal advice, is surely a very definite indication to the profession that there is a determination to enforce the Act as it stands ruthlessly, without any attempt to "meet any views of the profession which do not conflict with the principles of the Act." The unnecessary hardship likely to be inflicted—particularly on younger men in partnership with one of more advanced years where compulsory purchase of the retiring or deceased partner's share is a condition of the partnership agreement—is likely to impose a financial load of some considerable moment. The Minister's failure to concede what to him must be a minor point must cause much misgiving when we realize the powers he is determined to assume in other directions over the life and soul of the profession from "the appointed day."

The suggestion is made that the continuance of partnerships or group practice is desirable, and most of us will agree with this; but once again one of the main safeguards of the patient of such a partnership has been that the choice of a new partner has been made by the partnership. Under the new Act no mention is made of any participation in the selection of the new partner by the existing partners, unless they happen to be members of the Medical Practices Committee; and I am convinced that, unless this is remedied, group practice such as we understand it at present will be eliminated through natural causes in course of time, as no one would be such a fool as to risk the choice of an independent body without accurate knowledge of the personalities in existing partnerships.

The basic salary might well be confined to that offered by the Executive Council through the Medical Practices Committee to the nominee to a vacancy in a partnership practice during a, say, six- or twelve-months preliminary assistantship such as is undertaken at present, to determine (1) whether the partners approve, and—Mr. Bevan please note—(2) whether the *patients* can cope with the incomer. At the end of that time the new partner would be sufficiently well known to create his own practice and income, whether by purchase and share in the general income or by gradual acquisition of overflow from the existing practitioners.

Most of us accept without hesitation the idea of a "General Medical Service for the Nation," but, quite apart from personal or, shall I say, selfish grounds, we are in a prime position to anticipate the effect on the patient of the implementation of the National Health Service Act as it stands. It is a great pity that we are not doing more to make the general public realize the inevitable deterioration which must ensue in the type of service which must be the outcome of Mr. Bevan's obstinate determination to drive us into a full-time State salaried service, where our allegiance would be to our new employer—the State—and not to our present employer—the patient.—I am, etc.,

Bishop's Stortford, Herts. R. P. GAMMIE.

SIR,—In the last ballot I answered "Yes." Had the issue been explained in more definite and concise language I should have answered "No." The official communications—(1) the Negotiating Committee's case, (2) the Minister's reply—published in the *Journal* of Dec. 20 (pp. 141 and 154) are again not sufficiently clear and may lead to confusion in the forthcoming ballot. I feel sure that a concise and simple summary of the whole position such as appeared in the *Daily Telegraph* of Dec. 22 by Mr. Derek Walker-Smith, M.P., is required.

It is certain that medical dictatorship will gradually replace medical democracy if we accept the Act in its present form. I therefore consider it essential that (1) a more detailed plan than has already been done be published for the guidance of all doctors who decide to stay outside the scheme—i.e., collection of fees, etc.; (2) the date of the ballot be postponed several weeks until the whole profession is properly organized to give battle should such be necessary.

The new National Health Service should not be accepted until the Act has been changed to recognize the following *five* main points:

(1) The right of appeal to the courts against dismissal by the Minister.

(2) Payment by capitation fee only. The basic salary should not be accepted, as it is only the thin end of the wedge towards a full-time salaried State service.

(3) Freedom of any doctor to practise anywhere. The amount of practice available by means of the capitation fee will act as a self-limiting factor, as under the present system. The stimulus to practise in unattractive areas should be by means of an increased capitation fee only.

(4) A clear definition of what constitutes a nursing-home. Anything that falls under this category should not be taken over by the State. Unless this is guaranteed the so-called freedom to remain outside the Service becomes a joke. Unless assured of the existence of private nursing-homes general practitioners and specialists who remain outside the Service are likely to find themselves without any facilities to treat patients suffering from anything other than minor ailments.

(5) Freedom of all doctors in any State service including the fighting Services (in peacetime) to publish anything they wish in any of the recognized medical journals without permission of their respective Service and without censorship other than that of the particular medical journal in question.—I am, etc.,

SERVICE PRACTITIONER.

SIR,—There is one point in the Minister's reply which I have not yet seen mentioned, but which is of great importance to the majority of general practitioners.

The Minister says: "There is no suggestion, of course, that any qualified medical practitioner should be in any way debarred from practising midwifery." Then later he says: "This committee will decide on the list of local practitioners suitable for answering calls from midwives and at the same time taking part in the maternity services provided by the new Act. Others, not included in the list, will need further obstetrical experience first, and the list will be periodically reviewed." How in the name of reason can these statements be reconciled?

If I am one of the "others" will I, or will I not, be debarred from practising midwifery in the Service? Or, to be even more specific, if I am in the Service but not elected to the midwifery list will I be able to take medical charge and responsibility for the prenatal and post-natal care and the confinement of my insured patients, and be paid for these services by

the State, or will I have to send my patients to a midwife and another doctor on the "list"? Can the Minister or anyone interested in seeing this part of the Act implemented as it stands to-day tell us the answer to these questions?

The matter seems to me to strike at the very root of our acknowledged principle of being free to exercise the are and science of medicine.

If the "others" are debarred from practising midwifery in the Service, then the first sentence quoted can, at best, only be called a terminological inexactitude. The "others" have been passed as competent by their university or college professors or they would not be qualified, and in the absence of proved incompetence or negligence after qualification I can see no justification whatever for preventing them working in the Service. General practitioners might next be prevented from treating pneumonia as this would be the province of "physicians," from treating a whitlow as this would be the province of a "surgeon," from giving an anaesthetic as this would be the province of an "anaesthetist."

We are qualified practitioners. It has been and should continue to be our right to decide when we shall refer our patients to another practitioner. And that should be only when we feel in need of his help or advice—and not when we are instructed to do so from "higher authority."

My fears are not fancies. Many of us experienced interference in our professional freedom during the war, but that is not necessary now. Let us see that it shall not be so by our united voice. In this as in the other vital issues raised with the Minister it is only by unity that we can ensure that the best possible service is evolved for our patients and ourselves.—I am, etc.,

Harrogate. D. C. WILLIAMS.

SIR,—A crucial question at this time which I think is being forgotten is, Do the public gain in health through the introduction of the Service at this stage?

The answer is obviously "No." The Service will call for more work among doctors owing to more visits by patients and the inevitable form-filling which is the necessary evil of any co-ordinated service. If we look upon the patients as the material with which we work, and whose medical well-being is our "finished job," then I'm afraid we're being forced on them at a time when workmen and material are of poor quality. We should have workshops (hospital beds)—the present numbers are inadequate; also assistants (nurses)—whose number is also inadequate.

A little variation in available foods may brighten a few, in mind if not in body. Tuberculous-infected milk can still take its toll of children, and tuberculous patients still linger at home waiting for hospital beds. However bad these are, and however good are the excuses for not remedying them now, the introduction of a health service, which to the patient promises improvement in medical care, can do nothing—in fact, we could be made the scapegoat for its failure.

Let us acept the role of heaven-sent advisers to Aneurin Bevan and tell him gently "No," or at least "Not yet."—I am, etc.,

Newport, Mon. H. J. HOUGHTON.

SIR,—I have never seen or heard discussed the obvious solution to the *aim* of the National Health Service—the desire of the public for the avoidance of doctors' bills. All patients desire private (in every sense) service, and pay for such when possible. Why not have universal private practice, raising panel patients to the private level, and let the £66 millions, plus insurance, pay the doctors' bills?—I am, etc.,

Farningham, Kent. H. M. DENHOLM-YOUNG.

SIR,—In all the letters which you publish in your issue of Jan. 3 I have not observed any mention of the one solid ground upon which we may rightly take our stand with the solid psychological backing of the general public, a prerequisite to any success—i.e., the absence of the right of appeal to the High Court. No amount of "haggling" over fees or the precise method of remuneration would cut much ice with the public, enlist their sympathy, or enhance our prestige. But to refuse us a right of appeal is a refusal of bare justice and reason, weakens the Minister's case, and is clearly illogical. *The Times* leader complained that the dispute was passing from the logical into the emotional. No emotion is involved in the right of appeal. I am heartily in favour of a basic salary.—I am, etc.,

Hassocks, Sussex. CHARLES FRANKLYN.

SIR,—One hears the question asked, "What can we do if the Minister brings the Act into operation in spite of us?" with dark hints as to the penalties for strikes by bodies other than trade unions. Surely there can be no question of a strike against a non-existent employer? Again, is there anything to prevent the individual general practitioner from saying to a patient on and after July 5, "I am not in the Service. I am perfectly willing to treat you, but in case the Minister gets up to any hanky-panky about the recovery of medical fees I must ask you to pay me each time I see you, and I am sorry, but I cannot let you have any certificate for anything." Perhaps some of your readers learned in the law will let us have their views on our powers and limitations.—I am, etc.,

Launceston, Cornwall. DONALD M. O'CONNOR.

The Treatment of Myasthenia Gravis

SIR,—Your interesting annotation on this subject (Dec. 13, 1947, p. 966) did not mention the recent work of Torda and Wolff (*Arch. intern. Med.*, 1947, **80**, 68) on the effect of intravenous administration of an enzymic hydrolysate of casein ("amigen") to five cases of myasthenia gravis. The concept that much of the symptomatology of myasthenia gravis could be explained by decreased synthesis of acetylcholine, and the demonstration that this synthesis could be increased *in vitro* by amino-acids and proteins, provided the rationale for their procedure. Muscle action potential records were made in patients with myasthenia gravis and in healthy subjects. Full details are given of one patient in whom the known decline of the amplitude of muscle action potential after prolonged indirect stimulation was prevented by amigen; this patient was even able to postpone the taking of "neostigmine bromide." The remaining cases were less severe, but responded similarly. There was an improvement in muscle function signified by increased performance of work and a reduction in the daily requirement of neostigmine bromide during the period of amigen administration. Obviously this effect of amino-acids in myasthenia gravis may implicate many processes, and examples of these are discussed. Admittedly Torda and Wolff stated that "no therapeutic implications are justifiable from these preliminary experiments," but their apparently favourable results would seem to deserve notice.—I am, etc.,

Rowett Research Institute, Aberdeen. L. R. C. AGNEW.

Penile Carcinoma

SIR,—I am bound to meet the friendly challenge of Mr. D. M. O'Connor (Dec. 20, 1947, p. 1010) for evidence of my belief that the mixed bacterial flora rampant beneath the phimotic prepuce may be transferred to the vagina and may there set up cervical carcinoma. The admitted relative freedom of Jewish women from the disease already raises a presumption in favour of this explanation.

For many years I sought to find a specific peculiarity in the tissues of precancerous areas. Such areas have usually been the sites of chronic local infection, especially by the staphylococcus, the treponema, the tubercle bacillus, or by a virus, or have been subjected to the action of tar or other chemicals, or have been unduly exposed to solar or *x*-ray radiation. Anatomically, on skin surfaces the cancer is preceded by papillary hypertrophy, on mucous surfaces by the formation of adenomata. I have demonstrated that a lymphatic capillary is the central structure of each papilla of the skin, and that in a papilloma this central lymphatic is blocked by previous infective lymphangitis. This observation, simple as it is, is in my opinion the key to the origin of cancer. A rise in intercellular pressure necessarily follows, the papilla swells up, and all its tissues are nourished at high pressure by stagnant but over-rich tissue fluid, largely deprived of its hormones and probably poor in oxygen. At this stage the bacteria have done

their work, and they usually disappear, but the nutritional upset persists, and under the influence of lymph stasis the papilloma may ultimately in the course of years evolve into carcinoma without the intervention of any new factor.

In lupus cancer, *x*-ray cancer, and tongue cancer I have traced every stage of this process, and Mr. O'Connor will find the evidence fully stated in my book *The Genesis of Cancer* (Kegan Paul, London, 1931). I have not had the material for extending my observations to cancer of the penis and of the cervix, but it seems most unlikely that these forms of cancer are exceptions to a rule which appears to be general. The papilla is a little physiological engine. It must be supplied with not too rich a mixture at the right pressure, and must have a free exhaust. Lymph stasis following local bacterial infection violates all these conditions, and cancer is the ultimate consequence.

Temporary lymph stasis is seen in every focus of acute inflammation as Nature's method of inducing proliferation and repair. The enormous legs of elephantiasis show how intense is the proliferative impulse imparted to a tissue if the lymph stasis is permanent. It was from a case of elephantiasis which presented about fifteen separate epitheliomata on the affected limb that my researches started.—I am, etc.,

London, W.1. W. SAMPSON HANDLEY.

A Method of Abdominal Palpation

SIR,—Dr. E. W. Price (Nov. 1, 1947, p. 703) argues in favour of abdominal palpation when the patient is sitting upright or leaning forward. I have been convinced for a long time that the abdominal palpation used on patients supine is frequently insufficient, and so I complete this first examination, when necessary, by the following methods:

(1) *Genu-cubital Position.*—This throws forward the deeper organs and enables one to distinguish some pains, especially those issuing from the right iliac fossa.

(2) *Orthostatic Position.*—When the patient leans forward, or is sitting, his legs are drawn up against his abdomen. Therefore I usually ask the patient to *lean backwards* and relax as much as he can. In order to make this possible he must be supported at the back. The physician behind the patient could support him, but this situation might prove awkward in some instances.

In order to avoid this difficulty I have had a "palpation board" constructed. It is 14 in. (35.6 cm.) wide and 6 ft. (1.83 m.) high. The top part of the board is attached to the wall at a distance of 17 in. (43.2 cm.), while the base of it is 24 in. (61 cm.) away; this inclines the board at an angle of 8–10 degrees.

To use the vertical palpation, one stands behind the board, between it and the wall. The patient is standing against the board in a leaning position and completely relaxed. The top part of the board is adapted with a groove; this enables it, when not in use, to be slid back against the wall so as not to take up too much room.—I am, etc.,

Geneva. M. J. DEMOLE.

General Anaesthesia and Surgical Shock

SIR,—In a recent article (1947) I cited evidence to prove that fainting and shock are identical in origin, and that both are due to overstimulation of the sympathetic nervous system, a prominent cause of which in civilized man is pain. Opponents of the theory of the sympathetic origin of shock have pointed out that shock fails to develop in conditions such as biliary and renal colic, in which pain is intense and prolonged (Moon, 1938). Painful (sensory) impulses, however, are not the only shock-producing impulses arising in damaged tissues (Moon, 1944).

That pain is capable of causing shock is clearly demonstrated by the effect, in pre-antiseptic days, of the introduction of general anaesthesia on the mortality from surgical operations (amputations). It is to be remembered that general anaesthesia, though effectively cutting off all painful impulses from the vasomotor centre via the sensorium, does not prevent the reception by that centre of non-sensory shock-producing impulses from the traumatized area via the spinal cord. To prevent the reception of such impulses spinal anaesthesia is required (Tomb, 1937).

In an address to the Hunterian Society in 1848 "On the Advantages of Ether and Chloroform in Operative Surgery" Dr. T. B. Curling quoted statistics showing that the death rate from surgical operations in the London hospitals during the year 1847–8 fell by 50% consequent upon the introduction of general anaesthesia—a result which must be attributed to the diminution of shock from the prevention of pain and the sympathetic overstimulation arising therefrom.—I am, etc.,

Sydney. J. WALKER TOMB.

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Thiouracil in Toxic Goitre

SIR,—In his letter (Dec. 6, 1947, p. 927) in connexion with our paper on "Thiouracil in Toxic Goitre" (Nov. 15, p. 759) Mr. Henri Roualle mentions experiments in which thyroid tumours have been produced in rats treated with thiourea. Although these and previous experiments on the same lines are remote from the clinical use of thiouracil, a watch must be kept for neoplasm developing in the thyroid in patients taking thiouracil. After four years' experience we have not yet seen such a development nor has it been reported as far as we know. In the animal experiments the thyroid enlarges, whereas in our experience thiouracil often leads to a reduction in the size of the goitre.

Mr. Geoffrey Keynes and Dr. J. W. Linnell (Dec. 13, p. 971) think that the ten deaths in our 95 patients are to be attributed to thiouracil or perhaps failure to employ some other form of treatment. In nine of the ten this was not so, as shown by the details we gave. Three cases were too near death on arrival for any treatment to be effective; they had thiouracil for a few days to a few weeks before death. Six patients died from cardiovascular disease not immediately due to toxic goitre. The average age of these nine patients who died was 70 years.

As to the potency of thiouracil in restoring normal rhythm in goitrous fibrillation, our figure of 50% restored understated the case. This was because we included in the failures two patients who died shortly after coming under observation and before there was time for thiouracil to exert its effect, and also one, possibly two, patients who also had mitral stenosis. No quinidine was used for any patient. It therefore seems that thiouracil is almost the equal of thyroidectomy in converting goitrous fibrillation to normal rhythm. Lastly, as to the cases in which thiouracil is to be preferred to surgery in toxic goitre, we think that this applies to the elderly, thiouracil being the safer, particularly in those with evidence of degenerative or hypertensive cardiovascular disease. Again, in younger patients with smooth goitres of moderate or small size our results showed good control with thiouracil and a high proportion of remissions.—We are, etc.,

HAROLD COOKSON.
Bournemouth. F. H. STAINES.

Tetraethylammonium Bromide

SIR,—In the annotation (Dec. 27, 1947, p. 1041) attention is drawn to the great possibilities of the drug tetraethylammonium bromide (T.E.A.B.). Stimulated by the early American publications, we obtained supplies of this drug early this year for clinical trial through the kindness of Dr. W. R. Thrower and Messrs. May and Baker. A short paper is being prepared giving the results of this trial, but it is not out of place to remark here that we have in general failed to produce the very favourable results reported by Coller *et al.* last June (*Annals of Surgery*, 1947, **125**, 729).

Our main use of the drug was to attempt to reduce those symptoms most troublesome to hypertensives attending the medical out-patient department—i.e., headaches and giddiness—by weekly or fortnightly administration of T.E.A.B. intravenously or intramuscularly. We found that some patients obtained dramatic benefit, headaches disappearing for days or even weeks and vision clearing appreciably, so that the smaller newsprint previously unreadable could be read with comparative ease. This last statement was made quite independently by three separate out-patients who had never seen each other and to whom no suggestion had been made that improvement

in visual acuity would result. The easing or abolition of headache for as long as several days surprised us, as the effect of the drug on the blood pressure is short-lived, lasting from a few minutes to at most an hour or two. We therefore substituted control injections of saline, elaborate and lengthy readings of blood pressure being taken as before, retinae and pupils being examined every few minutes. Equally satisfactory results in improvement in vision and lessening of headache were reported by the patients after such "dummy" injections.

Apart from this small group where improvement was effected by suggestion no really satisfactory results were obtained with the drug, and the high hopes we held for its being useful in treatment of hypertensive patients unsuitable for sympathectomy have not been fulfilled. We have found the effect of the drug on skin temperature of the extremities variable and erratic and less satisfactory than simpler methods. In some cases little or no drop in blood pressure resulted, though most patients had some depression of systolic and diastolic pressure for 3 to 30 minutes after intravenous injection of 100–600 mg. of the drug. The rate of the injection appeared to play a part as well as the dosage given, the more rapid the administration of the drug the more the effect on the blood pressure.

As stated in your annotation, T.E.A.B. is an impracticable therapeutic agent, but it may prove of use to the research worker. We have not found it a useful drug either in testing rises in peripheral skin temperature or in lessening symptoms in hypertensive subjects. In the last group of cases the psychogenic element features largely in so many cases, and it is easy to produce symptomatic relief by suggestion backed by elaborate investigation. Nevertheless it is possible that new uses may yet be found for this drug, and our trial is still in progress. —I am, etc.,

London, S.W.1. F. DUDLEY HART.

Acute Non-specific Gastro-enteritis

SIR,—We note with interest the letter from Dr. William Forster (Dec. 13, 1947, p. 971) describing an outbreak of acute non-specific gastro-enteritis in a mental hospital, and we would like to comment on a few of the points made in it.

Treatment and Prophylaxis with Sulphonamide Drugs.—In our experience of a number of outbreaks, some in mental hospitals, treatment of established cases of gastro-enteritis of this type with sulphaguanidine has been without effect on the duration and severity of illness as compared with controls treated symptomatically, a finding in agreement with that obtained by Dr. Forster, using phthalylsulphathiazole. Dr. Forster suggests, however, that "sulphonamides were effective in prophylaxis." Examination of the data given in his letter yields little to support this conclusion, for the drugs were administered when the ward outbreaks had been in progress for some days (9–17 days) and when the attack rates were declining naturally. Again, at least four patients commenced the disease while they were actually receiving prophylactic sulphonamide.

In our experience the duration of outbreaks in mental-hospital wards where no prophylaxis had been undertaken was relatively short, due possibly to the rapid spread of the disease through an unchanging population. Thus in a Leicester mental-hospital outbreak[1] the duration of ward outbreaks on the male side of the hospital ranged from 7 to 14 days (mean 9.8 days) and on the female side from 12 to 22 days (mean 18.4 days). There was therefore considerable variation between wards, but the figures are of the same order as those (12, 15, and 20 days) occurring in Dr. Forster's wards in which prophylaxis was undertaken. The variability between untreated wards makes deductions concerning the value of prophylactic treatment extremely hazardous.

Variation in Attack Rates in Wards with Different Populations.—It was very interesting to note the uniform gradation of the size of attack rate in different wards as given in the table of Dr. Forster's letter. Thus, wards having overcrowded low-grade mental patients tended to have higher attack rates than the wards which were less crowded and had patients of a higher mental grade. We have observed a similar gradation in two mental-hospital outbreaks.[1 2] This may be partly a reflection of the degree of day-time dispersion in different ward populations, but investigation of these differences and their relation to the mode of spread of the disease might be illuminating. The problem might be approached by comparing the attack rates in "non-specific gastro-enteritis" in these varying ward populations with the rates observed on the one hand in diseases whose method of spread is intestinal–oral, such as bacillary dysentery, or on the other hand "airborne," such as influenza.

Mode of Spread of the Disease.—In the mental-hospital outbreaks that we have investigated, as in that investigated by Dr. Forster, case-to-case infection rather than water or massive food-borne infection has been the pattern of spread. Dr. Forster states, however, that the infection was "probably airborne" in his outbreak. It would be interesting to know the facts which led Dr. Forster to this conclusion. It is a commonly held belief that the disease is spread by the "airborne" route, but we are in ignorance of the epidemiological method which enables a distinction to be made between "airborne" and case-to-case contact spread of infection. The mere fact that the disease is very infectious, has high attack rates and a particular seasonal incidence, is not by itself sufficient evidence for a respiratory mode of spread.

The findings of Reimann *et al.*,[3] who transmitted a similar gastro-enteritis to student volunteers when they inhaled nebulized filtrates of throat washings or stool but failed to infect volunteers by feeding stool filtrate, have influenced the interpretation of outbreaks in this country. Reimann was, however, the first to point out that his experiments were undertaken under difficult circumstances in that the volunteers could not be isolated from the rest of the student body which was experiencing natural attacks of the disease. Further, examination of his figures reveals that the incubation period was between 9 and 21 days in 42% of the volunteers having gastro-enteritis, and as the natural incubation period is 3–5 days it is questionable whether these later cases were in fact due to inoculation. The volunteers were inoculated in batches on six different days using, from (presumably) different donors, material which consequently may have been of different activity. The results obtained by Reimann should, therefore, be applied with caution until they have been confirmed.

Recently a well-planned and controlled experiment has been undertaken in New York by Gordon and colleagues.[4] These investigators, using known susceptible and carefully isolated volunteers, have shown that a clinically similar gastro-enteritis of the type under discussion can be transmitted by *ingestion* of filtered stool or unfiltered throat washings but not by the *inhalation* of nebulized throat washings known to be infective by ingestion. It remains to be proved, of course, that the disease described by Reimann, the New York workers, and various investigators in this country is in fact the same regardless of the similarity of clinical picture, but enough has been said to illustrate the need for caution in labelling the disease an "airborne" infection.—We are, etc.,

B. P. MARMION.
G. T. COOK.

[1] [2] These data are quoted with the kind permission of Dr. K. K. Drury, Carlton Hayes Mental Hospital, Narborough, and Dr. T. W. Davidson, City Mental Hospital, Humberstone, Leicester.
[3] *Proc. Soc. exp. Biol.*, N.Y., 1945, **59**, 8.
[4] *J. exp. Med.*, 1947, **86**, 409

Penicillin in Otitis Media

SIR,—With reference to the report of the meeting of the Section of Otology of the Royal Society of Medicine (Dec. 27, 1947, p. 1049) may I be permitted to give a general practitioner's experience in the treatment of otitis media with systemic penicillin, both in acute and chronic cases?

I use the oil–wax suspension of 1,250,000 units in 10 ml., giving a single injection of 200,000 to 300,000 units daily. I had eleven cases of acute otitis media with otorrhoea in children between the ages of 2 and 14; and, with the exception of one, there were no recurrences from two to eight months after injection. The discharge ceased on the second or third day and hearing became normal within fourteen days. I gave another course of penicillin to the recurrent case, and the patient has been free from discharge for the last four months. I have also dealt with six cases of otorrhoea due to chronic otitis media, out of which three recurred, the other three having now been free from discharge from eight to thirteen months. One of the recurrent cases had another course of penicillin injections and has now been free from discharge for the last four months.

I give herewith a short history of a case of chronic otitis media:

A man aged 44 developed a right otitis media with otorrhoea 36 years ago. He had been attending hospital ever since and was treated with peroxide ear drops. He was never free from aural discharge for more than two months. His hearing was becoming impaired and he felt dizzy on bending down his head. In November, 1946, I gave him one injection daily of 250,000 units of penicillin calcium in oil–wax suspension for five days. The discharge ceased on the third

day, his dizziness disappeared in a week, and after more than thirteen months the discharge has not recurred, his hearing is greatly improved, and his dizziness has ceased.

I write in order to refute the claim that four-hourly injections are necessary, as stated by Mr. I. Simson Hall (Dec. 27, 1947, p. 1050), and also to make a strong appeal to other doctors to try treating the chronic cases of otitis media with large doses of penicillin, as suggested above, since the number of cases of otitis media in the country must be enormous, and apart from the inconvenience of discharging ears and deafness there is always a danger of more serious complications. Operation, apart from its risk, is not always effective, and patients are usually reluctant to submit to it.—I am, etc.,

Sheffield, 5. I. GOTTLIEB.

Dicoumarol

SIR,—From the vast literature on the pharmacological action and therapeutic use of dicoumarol there appear several findings which are of importance in the control of dicoumarol therapy: (*a*) It is not advisable to reduce the prothrombin to such a degree that the ordinary blood-clotting time becomes prolonged.[1] (*b*) Very low prothrombin concentrations must be attained before the clotting time is significantly altered.[2] (*c*) Intravascular thrombosis rarely occurs in patients on dicoumarol if the prothrombin is kept below 30%, while haemorrhagic complications are rare if the prothrombin is kept above 10%.[3] (*d*) In the Quick method of prothrombin estimation the source of thromboplastin is acetone-dried rabbit brain.[4 5]

The clotting time (Lee and White method), which Dr. M. J. Pivawer (Dec. 6, 1947, p. 928) recommends as a means of controlling the dosage of dicoumarol, has very little experimental evidence to support it. From my own experience the clotting time does not appear to give sufficient warning of the approach of, nor in some cases the arrival at, the danger level of 10% prothrombin. This is illustrated in the following case.

Case 1.—A post-operative patient received 650 mg. dicoumarol over a period of three days. On the fourth day the prothrombin concentration was found to be less than 10% by the Quick method and 35% by the Fullerton modification[6] of the Quick method. The patient developed a haematoma at the site of operation. At this stage the clotting time (Lee and White method) was normal and no different from the clotting time estimated before the administration of dicoumarol.

Full details of Quick's method are to be found in his excellent monograph. I have found acetone-dried *human* brain to give as satisfactory results as acetone-dried rabbit brain. For every batch of dried brain which one obtains a graph must be plotted correlating prothrombin times with prothrombin concentrations. In the Fullerton modification[6] of the Quick method Russell-viper venom is the source of thromboplastin. The results are often misleading and may cause an overdosage with dicoumarol. This is illustrated by the following case.

Case 2.—A post-operative case which developed a thrombophlebitis received 1,700 mg. of dicoumarol over a period of eight days. Prothrombin estimations were carried out daily by the Fullerton modification. At no time during the eight days was the prothrombin found to be below 25%, which, in view of the large amount of drug administered, was rather curious. On the eighth day I estimated the prothrombin by both methods. The prothrombin was well below 10% by Quick's method and about 25% by the Fullerton modification. Treatment with dicoumarol was immediately stopped, but the prothrombin concentration continued to fall. Six days later the patient had a severe epistaxis, and it was noticed that his operation scar was not healing. At this stage the prothrombin was less than 5% (Quick method) and about 20% (Fullerton modification). Fortunately in this case the prothrombin began to increase the next day and bleeding stopped. About six days elapsed before the prothrombin was over 30%.

Dr. Frank Marsh (Dec. 20, 1947, p. 1009) advocates a method in which "perfectly fresh viper venom of (if possible) guaranteed potency" is required. This method, in which "it may be necessary to do twelve tests on one specimen of plasma," seems to me to be complicating the issue. With the Quick method the results are so concordant that it is rarely necessary to use more than three tubes per specimen of plasma.

My conclusions are, therefore, that the most reliable method at present for the control of dicoumarol therapy is the daily estimation of prothrombin concentration (sometimes called prothrombin activity) by means of Quick's method, in which the source of thromboplastin is acetone-dried brain. Using this method I find that 24 hours after the administration of 300 mg. dicoumarol the majority of cases show a prothrombin concentration of 50% or lower. It is these latter figures which determine the dose to be given on the second day. Most workers will agree with your correspondents that heparin is most valuable, in certain cases, during the period when dicoumarol has not yet lowered the prothrombin concentration to the optimum range of 10 to 30%.—I am, etc.,

Manchester. H. LEMPERT.

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2 Davidson, C. S., and Macdonald, H., ibid., 1943, **205**, 24.
3 Allen, E. V., *J. Amer. med. Ass.*, 1947, **134**, 323.
4 Quick, A. J., Ibid., 1938, **110**, 1658.
5 —— *The Haemorrhagic Diseases*, Springfield, Illinois, U.S.A., 1942.
6 Fullerton, H. W., *Lancet*, 1940, **2**, 195.

SIR,—We have been interested in the increasing correspondence regarding the administration of dicoumarol and feel that the letter of Dr. M. J. Pivawer (Dec. 6, 1947, p. 928) calls for critical comment. First, in our experience Quick's method of prothrombin-time estimation has given satisfactory results. There are one or two practical points which are of importance. The blood required for the test should be withdrawn at the same time each day, preferably before a meal, and the time and timing of each stage of the technique should be consistent throughout. It is imperative that clean and smooth test-tubes be used for the test. We have found that the "stypven" solution (thrombokinase) requires renewal every third day, and if a new solution is made up from the same batch and overlapped with the old solution errors from this source are eliminated. We have found the first appearance of granularity to be a reliable end-point of the reaction. We have investigated the usefulness of the lecithin-accelerated method of Witts and Hobson, and, although impressed at first by the sharpness of the end-point, we now believe that this advantage is offset by the shortness of the actual time measured and the possible disadvantage of introducing one more variable reagent.

Unexpected minor variations of prothrombin time do sometimes occur during dicoumarol administration, but we have found that by graphing the daily results and by intelligent anticipation it is possible to maintain a patient in the therapeutic range with safety. The dosage we have employed has been 300 mg. of dicoumarol on the first day, and 200 mg. on the next two days, followed by 100 mg. daily as indicated by prothrombin time. We aim to keep the prothrombin time between two and two and a half times the result determined before therapy is begun.

Secondly, we would strongly deprecate attempts to treat patients in any circumstances which do not permit of accurate daily prothrombin-time estimation. It is generally agreed that the effect of dicoumarol on the coagulation time is less consistent than the effect on the prothrombin time. Indeed, lengthening of the coagulation time is usually not seen until quite marked increase in the prothrombin time has occurred.

Thirdly, the object of dicoumarol therapy is to prevent intravascular clotting, and if therapy is to be fully effective the coagulability of the blood must not be allowed to return to normal during the treatment.—We are, etc.,

London, E.C.1. G. CANTI.
D. J. ROBERTSON.

German Tropical Medicine

SIR,—I want to make a comment to the leading article, "German Tropical Medicine," in the *Journal* of Nov. 1, 1947 (p. 697). You write: "Bacillary dysentery caused much trouble, particularly in Poland in 1939 and in North Africa. Treatment by sulphonamides, especially sulphapyridine, was eventually introduced, although much later than in the Allied forces."

If there is the implication that Austrian and German literature, as we are using the same language, are taken together, this statement is not correct. In fact I used "prontosil" for the treatment of bacillary dysentery much earlier than the Allied forces (see Gorlitzer, V., *Schweiz. med. Wschr.*, 1940, **70**, 281; Gorlitzer, V., *Klin. Med., Wien*, 1947, **2**, 862).—I am, etc.,

New Delhi. V. GORLITZER.

H.T.S.T. Pasteurization

SIR,—In your leading article of Dec. 6, 1947 (p. 914), "High-temperature Short-time Pasteurization," the efficacy of sterilization is very clearly set forth. No reference, however, is made to the effect upon vitamins. Presumably this has been estimated and been found to be no more harmful than that of the "holder process." It would be gratifying if some assurance could be given on this point.—I am, etc.,

London, W.1. HUMPHREY NEAME.

"Unjustified" Use of d-Tubocurarine Chloride

SIR,—Many of your readers will be well aware that the advancement and perfection of obstetric anaesthesia is a cause very near to my heart, and that in these very columns I have had to defend at least one new method against the attacks of the sceptical. It was with exceptional interest, therefore, that I studied the recent replies to my letter (Nov. 22, 1947, p. 840) from Dr. H. Vincent Corbett (Dec. 13, p. 976) and Mr. Percy Malpas (Dec. 20, p. 1009). After such impressive testimony it is obvious that I overstated my case and I unreservedly withdraw the word "unjustified" (even when garnished with inverted commas to make it less unpalatable) and hasten to effect a remorseful retreat from the ranks of the reactionaries, where I appear temporarily to have strayed. Having met my Liverpool friends more than half-way, however, I would like to add a few comments and qualify my repentance.

Of recent years, when giving general anaesthetics for caesarean section, I have been in the habit of utilizing a very light plane of cyclopropane anaesthesia with similar results to those described by Dr. T. Cecil Gray (April 5, p. 444), with the exception that our mothers did not recover consciousness "as the last stitch was tied." They did, however, make a reasonably rapid recovery—in all senses of the word—unless they happened to be in poor shape prior to operation. I cannot see that there is any virtue *per se* in awaking while in the operating theatre so long as the patient does recover uneventfully.

As is evident from this correspondence, obstetric opinion is still divided as to the necessity for abdominal relaxation during caesarean section. My remarks on the subject were of course a quotation—as will be seen from my letter—but on thinking things over I realize that I was quoting an opinion prevalent during the height of the ethereal era, when patients were very much more upset by general anaesthetics than is now the case, and also when even a small increase in anaesthetic depth might make all the difference between a lively or a lethargic infant. Under such circumstances abdominal relaxation could only be secured at the risk of a higher rate of foetal mortality and was in consequence severely discouraged.

With regard to my theory of the stimulating action of *light* levels of cyclopropane anaesthesia and of thiobarbiturates upon the uterus, I feel sure that Dr. Vincent Corbett cannot seriously believe that we were naive enough to base our opinion solely upon the incident—however forcefully it brought itself to our notice—of the "eyeful of liquor." In the case of thiopentone we found it next to useless for external version, owing, as far as we could judge, to tenseness of the uterus—a condition which appeared evident also during caesarean section under the same anaesthetic. If pushed to deep planes cyclopropane *could* be used for external version, but in the light planes employed for obstetric anaesthesia we noted the following: a tense uterus during caesarean section (the mother not being in labour) which retracted eagerly after delivery of the foetus and placenta; fairly frequent and forceful contractions during forceps delivery; and, after delivery per vias naturales, the placenta was rapidly extruded (often within a matter of minutes) and the uterus retracted to a "hard ball," rarely required the administration of pituitrin or ergometrine, and permitted of but a very small blood loss. All this naturally makes me somewhat sceptical as to the role which curare might be thought to play when thiobarbiturates, light cyclopropane, and *d*-tubocurarine chloride act upon the uterus in synergistic trinity.

Before the advent of curare there is little doubt that the administration of thiopentone for caesarean section reduced the whole performance to a surgical sleight of hand. Owing to the effect of the anaesthetic upon the foetus only rapid surgeons could operate successfully, and at least one obstetrician (not at King's), with a reputation for speed, is reputed to have incised skin, linea alba, peritoneum, uterine wall, and the baby's back in one heroic sweep—a "classical" operation in every sense of the word! Dr. Gray's introduction of *d*-tubocurarine chloride into this type of surgery, with its known property of reducing the quantity of anaesthetic otherwise necessary, appears to single out the blessings of thiobarbiturates without their obstetric disadvantages, and I am now quite converted to the idea. If anybody is still on speaking terms with me in Liverpool I would very much like to visit them and see this anaesthetic at work.—I am, etc.,

Epsom, Surrey. A. H. GALLEY.

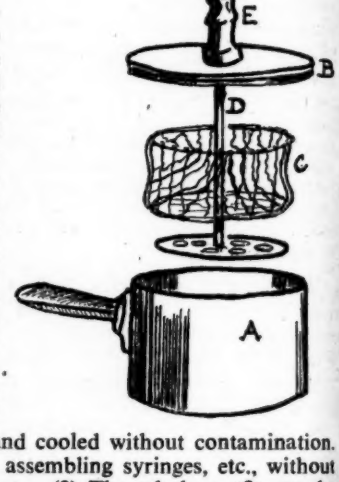
Oxygen Unit for Newborn Infants

SIR,—I was interested in Dr. P. C. D. MacClancy's account (Dec. 13, 1947, p. 970) of an oxygen unit for newborn infants. We have had in use since June, 1947, at the City Lodge Hospital, Cardiff, a unit very similar to the one described, the only important difference being that the sides are made of separate pieces of 1/4 in. or 3/16 in. (0.6 or 0.45 cm.) "perspex" cemented together, and thus can be made reasonably easily by the hospital staff. We have also a larger unit which will completely cover the whole of the normal maternity cot as used at City Lodge Hospital. Both types have a detachable airtight lid allowing free access to the infant undergoing oxygen therapy without necessitating the removal of the whole unit. These units, which were designed and made by the hospital occupational therapist with the help and advice of the medical and nursing staff, have done excellent work in the hospital premature nursery.—I am, etc.,

Cardiff. J. GREENWOOD WILSON.

Improvised Sterilizer

SIR,—The sketch illustrates an aluminium saucepan (A) with lid (B) : also a "chip-basket" (C), from which the long handle has been removed, and a copper (or other rustless metal) rod (D), with a perforated-disk base. This rod pierces a hole through a metal sleeve (E) in the centre of the lid, from which the knob has been removed. The instruments to be sterilized by boiling are placed in the basket and immersed in water in the pan. The whole is boiled over a gas-ring, or, if preferred, an electric saucepan can be used. After boiling, the rod is used to lift the lid and basket from the pan. The water is poured away and the lid and basket replaced. The pan can be then gently heated to dry the instruments.



The advantages are: (1) The instruments are lifted out of the water and can be dried and cooled without contamination. Sterile forceps are ready for assembling syringes, etc., without handling the latter with fingers. (2) The whole outfit can be bought at any hardware stores and the alterations made by any tinsmith. (3) It is cheap : this cost altogether 16s. 3d.—I am, etc.,

Keighley, Yorks. WRIGHT LAMBERT.

Natives of the Tropics

SIR,—During my stay in this country I have been attending various hospitals both in London and in Edinburgh. In all these places I have often heard the senior as well as junior doctors use the word "native" when referring to Indians, Africans, or people of any other tropical country. To give an example : "The natives suffer from beriberi more often than the Englishmen." The word "native," a reference to any dictionary will reveal, applies to the indigenous race of a country. When an Englishman therefore uses the word "natives" he should by rights refer to the natives of England. But this is not the case. The word is used by him as a contemptuous reference to the tropical races.

My coloured fellow-students who hail from China, Malaya, Burma, and India and I have often discussed this matter in the institute where I am studying. It has on quite a number of occasions caused us annoyance. We would rather be called Indian, Chinese, or Malayan than just a "native." I shall of course have no objection to being called a native of India, just

as a Frenchman should have no objection to being called a native of France, an American a native of America, or an Englishman a native of England. The word "native" used by itself when referring to the tropical races rouses in the minds of the coloured people a spirit of hatred, for it naturally reveals an arrogance on the part of the individual who uses it. I am writing this letter as a plea to the European doctors here to at least respect the feelings of the "natives" who study with them.—I am, etc.,

London, W.C.1. M. V. CHARI.

Measles Prophylactic

SIR,—Dr. Harwood Stevenson (Dec. 6, 1947, p. 928) and Dr. A. H. Morley (Dec. 27, p. 1054) have advocated the intramuscular injection in children of parental whole blood as a routine procedure in cases of measles contacts. May I suggest that a very strong warning is needed against the indiscriminate use of such a procedure, especially in girls, because of the danger of Rh sensitization? Such sensitization, produced by the injection of Rh-positive blood rather than by pregnancy, is liable to produce a severe form of congenital haemolytic disease and, what is worse, to produce it in the first infant. The general practitioner should therefore in each individual case of contact, especially if this is a girl, balance the advantage of attenuating an attack of measles against the danger of ruining for ever this girl's chances of giving birth to normal or even live infants.

That this possibility although admittedly rare is nevertheless real and not of theoretical interest only is well demonstrated in the following case taken from Wiener's paper on the "Pathogenesis of Erythroblastosis Fetalis" (*Amer. J. Dis. Child.*, 1946, 71, 25).

Case 2.—A young woman's first pregnancy resulted in an unexplained stillbirth. She was referred to us by her physician to find out whether the Rh factor had any bearing on this problem. Results of blood tests were as follows:

Blood	Group and Subgroup	MN Type	Rh Type
Husband	0	MN	Rh 1
Patient (wife)	0	M	Negative

The patient's serum did not contain any anti-Rh agglutinins, but it did contain Rh-blocking antibodies of a titre of 10. This explained the stillbirth, but it was not clear how the patient had become sensitized to the Rh factor, as she had never received a blood transfusion. On being questioned further, she recalled that ten to twelve years previously she had been exposed to measles and was given an intramuscular injection of her mother's blood, the then current method of prophylaxis. The supposition that this was the source of the sensitization was confirmed when tests of the mother showed her to be Rh-positive (group O, type Rh 2). Ironically, the patient and her mother recalled that one of us (W.) had given the injection at their paediatrician's request.

If the general practitioner has strong reasons to desire the prevention or attenuation of an attack of measles he should ask for a determination of the Rh type of the donor and the recipient. With the increasing facilities for Rh-typing, the delay involved could be made quite short, perhaps a few hours only, and in view of the grave consequences this delay and the additional labour are fully justified.—I am, etc.,

Newcastle-upon-Tyne. S. A. DOXIADIS.

Two Mongol Children in a Family

SIR,—I was very interested in Dr. G. H. Auden's memorandum (Nov. 19, 1947, p. 869), and in view of his opinion that any such cases should be put on record because of the rarity of the occurrence, I am reporting an instance I encountered recently.

As in Dr. Auden's case, both parents were young healthy country folk, both aged 29 when the first child, a girl, was born on April 10, 1936. The second child, a boy, was born on April 23, 1942. Physically they are typical cases—brachycephalic, with short buccal cavities, short terminal phalanges, slight crooking of the little fingers, and hypotonia. There is no nystagmus, but the girl has defective vision. General development is poor, and both are imbecile. Temperamentally, they differ. The girl is rather obstinate, but on the whole happy and contented. The boy is fretful and irritable. Both are fond of music.—I am, etc.,

West Herts. HELEN M. KEITH.

POINTS FROM LETTERS

A Sign of Appendicitis

Dr. ADALBERT DESSEWFFY (Budapest) writes: In cases of chronic appendicitis, and less frequently in subacute ones in which there are, in spite of the intraperitoneal position of the appendix, but few decided intraperitoneal symptoms, we can prove the disease of the appendix under circumstances by extraperitoneal symptoms. The technique of the examination is as follows: The patient, who is lying horizontally on his back, must be called upon to lift his upper body somewhat from the base without the help of his arms, merely by his trunk muscles, and to turn in the meantime his upper body at first entirely to the right and then entirely to the left, in order to make not only a rotating movement but also a torsion of the lumbar spinal column. In order to facilitate his making these movements we must fix his pelvis by pressure against the base. Particularly the ileo-psoas, as well as the quadratus lumborum supported by the deep back muscles, are contracted in these movements. In turning the lumbar spinal column in the opposite direction—that is, to the left—it will be the psoas, and in turning it laterally—that is, to the right—it will be the quadratus, which is more contracted. A pain in the appendix region . . . after turning the lumbar spinal column to the opposite side—that is, to the left—is characteristic of illness of the appendix. . . . Sign "D" must not be overestimated; it must only be valued as part of the entire diagnosis. It must occur only unilaterally on the right side. At repeated examinations the pain will appear always at the same place—that is, in the appendix region. In gynaecological diseases "D" sign will always be negative. A pain appearing on turning the lumbar spinal column laterally to the right is mostly situated somewhat above the appendix and will rather indicate a lumbago. A rather rare pain may occur in association with sign "D" in the appendix region during active movements of the right thigh bent or much adducted or turned outwards at the hip joint when we oppose these movements.

Penile Carcinoma

Mr. DAVID M. SERR (Leeds) writes: In the discussion on the relative immunity of Jewesses to carcinoma of the uterus your correspondent states (Dec. 20, 1947, p. 1010) that this immunity is almost certainly due to the circumcision of the male. This being an unsupported statement, it would be as wise, I think, to stress what may be even more important a contributory factor—namely, the Jewish laws of separation, forbidding coitus during and for seven days after menstruation. Weinberg and Rubin, when discussing the significance of the statistical figures they had collected on this subject, suggest that the immunity is due to something in the mode and habit of life of married Jewish women. Dr. Sourasky, in a paper read at the International Cancer Conference (London, July, 1928), suggests the view that the observance of the Mosaic ritual laws by the mass of Jewish women contributed to the low incidence of cancer of the uterus. While it may be fairly logical to attribute to circumcision the immunity from cancer of the penis in Jewish males, I think it is more reasonable to stress the separation laws as being the more important contributory factor in the immunity of Jewish females from uterine carcinoma. In view of Mr. Sampson Handley's observations among the Fijians it would be interesting to know if there is in their mode of life anything comparable to this to account for their immunity from the disease.

Belladonna Poisoning

Mr. I. ISAACS (Merthyr Tydfil) writes: With reference to "Per Ardua ad Asylum's" remarks on belladonna poisoning (Dec. 27, 1947, p. 1056), he surely has given concrete examples of the dangers that exist under the present Army method of allowing dispensing to be carried out by orderlies. The obvious and vital necessity of all dispensing to be done only by qualified pharmacists is striking if we are to remove the great risk to human lives that must exist under the present system. . . .

Plebiscite

Dr. M. DOWNEY (Leicester) writes: May I, as a general practitioner, suggest that the next plebiscite paper have only *one* question for answering—viz., Do you agree to enter the National Health Service in its present form? Yes or No to this one question will decide whether the profession wants to become a State-salaried service or not.

Coupons for Colostomy Belt

Dr. CHARLES J. SWANSON (Aberfeldy, Perthshire) writes: It has recently been brought to my notice that the Board of Trade demand from the sufferer from colostomy three clothing coupons before he can be supplied with the belt which makes life bearable for him. This apparently trifling exaction surely displays a callous indifference to human suffering and is one of these insulting pin-pricks which display a grossly inhuman injustice. . . .

Obituary

D. P. FITZGERALD, B.A., M.D.

Prof. D. P. Fitzgerald, emeritus professor of anatomy at University College, Cork, died in Cork on Jan. 2, aged 76.

Denis Patrick Fitzgerald was born and educated in Cork, and in 1870 he received the degree of B.A. from the Royal University of Ireland. He began his medical studies at Queen's College, Cork, in the following year, obtaining many scholarships, exhibitions, and prizes as a medical student. He graduated M.B., B.Ch., B.A.O. in 1896. In the next year he became house-surgeon to the Cork Eye, Ear, and Throat Hospital and was made demonstrator of anatomy at Cork. This was the beginning of a long academic career. In 1907 he became lecturer in osteology, and from that time onward acted as deputy to Bertram Windle, then professor of anatomy; in the same year he was appointed lecturer in anatomy at the Cork Municipal School of Art. In 1909, on the resignation of Prof. Windle from the chair, Fitzgerald was appointed professor of anatomy at Queen's College, later known as University College. He acted as a member of the Senate of the National University, and served also on its Board of Studies. He was an examiner in anatomy at the Royal College of Surgeons in Ireland for many years. In 1940 the Senate of the University recognized his long service by conferring upon him the degree of M.D. In this year also the Faculty of Medicine at Cork made him its dean, an office which he held until his retirement from the chair in 1942, when he became professor emeritus.

"D. P.," as he was affectionately termed not only by his own students but also by many in the sister colleges, will be long remembered for his quiet and gentle manners. He was essentially a dissecting-room anatomist, one of the group which laid the topographical foundation from which the first adventures in aseptic surgery were launched. His published papers were osteological, except for an account of certain abnormal ocular muscles published in the *Journal* in 1898. His interests extended beyond the walls of his department. Like most Irishmen he had a strong sense of history, and was a recognized authority on the history of his native city and county, a topic on which he wrote much. He is survived by his widow and eight children, two of whom are members of the medical profession.—R. O. R.

JOSEPH NICHOLAS SANKEY, M.B., F.R.C.S.

Surgery in the Midlands and the Birmingham Medical School in particular have suffered a severe loss in the sudden and untimely death of Joseph Sankey, whose death on Dec. 30, 1947, at the age of 47, was due to a coronary thrombosis. His busy consulting practice, which was based on the support of a wide circle of professional friends, and his hospital appointments on the staff of the Queen Elizabeth Hospital, Birmingham, and the Guest Hospital, Dudley, occupied him so completely that he was left with little time for writing or leisure, and for months before his death he was worn down by overwork. During the period of the war especially he was taxed to the limit by his preoccupation with the Facio-Maxillary Unit at Barnesley Hall, the heavy work of which he shared with Mr. Harold Round. His special interest in plastic and facio-maxillary surgery slowly emerged some years ago out of a broad basic training in general surgery, and latterly he was seeking to shed some of his general surgical work and concentrate more and more on his specialty. However, he never took a clear-cut step to achieve this. Loyalty to old practitioner friends, and a sincere attachment to the wider aspects of surgery, delayed his decision, and his professional life was over full largely because of this double burden.

Joseph Nicholas Sankey was a student at Birmingham and at the Middlesex and London Hospitals. He graduated M.B., Ch.B. in 1923, and took the F.R.C.S. in 1926. He held resident appointments at the General Hospital, Birmingham, and in London at the Samaritan Hospital and Queen Charlotte's, where he was R.M.O. After his appointment in 1932 as assistant surgeon to the Queen's Hospital, Birmingham, he went to America for a period of study leave which he spent mainly at the Mayo Clinic, where the inspiration and example of William and Charles Mayo exercised a permanent influence on his surgical education and gave him a scientific outlook on surgery so valuable to one about to take up his duties in a medical school. Later, under the influence of Kilner, he became interested in plastic surgery, and with the impact of war he transferred his interest more and more to this aspect of his work. In his specialty he was deft and ingenious and had that touch of artistry which is essential to success in this branch of surgery; furthermore, his friendly and sympathetic approach secured the confidence and co-operation of his patients in their tedious and prolonged reconstruction operations.

Sankey had a great capacity for friendship. To run across him was always a pleasure, and though his days were full he gave the idea that he had not a care in the world and found nothing but pleasure in your company and happiness in the chance encounter. He faced life with great courage. He never intruded his troubles upon his friends and he appeared to be wholly at the disposal of any patient or friend with whom he came in contact. Many of his qualities arose out of his somewhat unusual background. Born in a Herefordshire village home, his family migrated to Canada in his childhood, and his boyhood was spent on a Canadian farm, whence, just before the 1914 war, his parents brought him on holiday to this country. Caught by the war, they had great difficulty in returning home, but eventually managed to do so, leaving the boy behind at the age of 16 at the Newport Grammar School. From this time onwards he maintained himself through his school and university days until he qualified. His experiences during this period gave him his broad outlook on life and made him very tolerant and happy in association with all classes in the community. His varied experiences during this uphill period, as a violinist in a band, as a factory worker, or as a farmhand, remained all his life as a not unhappy memory, about which he could occasionally be persuaded to speak with a whimsical humour which was a part of his charm.

The very large attendance at the Memorial Service in St. George's Church, Edgbaston, afforded a striking testimony to the widespread respect in which he was held in the community in which he worked. Sankey was unmarried, and most of his relatives are in Canada, and it was fortunate that last autumn he found it possible to visit his father in the course of a flying visit to Vancouver which gave him great pleasure and some relief from the strain of practice.—S. G. B.

Dr. H. S. Littlepage writes: "Joe" Sankey's academic career and ability as a surgeon were brilliant. His kindness to the sick and his loyalty to general practitioners were among many outstanding qualities which he possessed, and many of us will always remember him as the "G.P.'s" friend. A call for his help at any hour of the day or night, to the rich or to the poor, was always answered in the same cheery way: "Sure. I'll be along." He had an amazing insight into a patient's character, and any fear of the operation or the anaesthetic seemed to fade away at his reassuring smile and sincere understanding. Young residents will also miss him greatly. So will his nurses. And anaesthetists will always remember his kindness, his patience, and his understanding when they were in difficulty.

C. A. MITCHELL, M.A., D.Sc.

Dr. C. A. Mitchell, at one time editor of the *Analyst* and a former president of the Medico-Legal Society, died on Jan. 5 at the age of 80.

Charles Ainsworth Mitchell, the third son of Dr. T. R. Mitchell, was born at Thetford, Norfolk, and was educated at King William's College in the Isle of Man, and at Exeter College, Oxford. He became a Fellow of the Royal Institute of Chemistry in 1897, two years after graduating, and his early interest in chemistry led him to an unusual but useful study—that of the history and analysis of inks. His book on the subject, which is already in its fourth edition, has become a standard reference work and is consulted when questions of the authenticity of legal documents of whatever age arise. For many years he contributed articles on scientific subjects, often of legal interest, to *Chambers's Journal* and to *Discovery* and other periodicals. He was president of the Medico-Legal Society from 1935 to 1937, honorary vice-president of the Medico-Legal Society of France, and vice-president of the Royal Institute of

Chemistry from 1937 to 1940. Among his other publications were *Science and the Criminal* in 1911; *The Evidence of the Casket Letters* in 1929; and *The Scientific Detective and the Expert Witness*, which appeared in 1931.

Dr. HENRY MARTIN MOGRIDGE WOODWARD, who died on Jan. 2 at his residence at Blackheath, was the son of the late Dr. Martin Woodward, of Pershore, Worcestershire. He was educated at St. Edward's School and Keble College, Oxford, and later at Guy's Hospital. In his younger days and until illness overtook him he was a keen athlete and rowed for his college. For a time he was on the stage, playing chiefly Shakespearean roles, but later he took up medicine and qualified in 1904. Soon after qualification he became house-surgeon to St. John's Hospital, Lewisham, and he devoted the rest of his life to the interests of that hospital. He was bacteriologist to the hospital for over thirty years, and although he had reached the age for retirement when the recent war broke out he continued his devoted services, attending the hospital daily, including Sundays, without any holiday. This undoubtedly had a serious effect on his health. He was not robust and had had several severe illnesses. At St. John's Hospital Dr. Woodward met and married Miss Elizabeth Thompson, and their partnership was an ideally happy one. He was consulting bacteriologist to several hospitals in South-east London and Kent, but his chief interest always remained St. John's Hospital, to the exclusion of private practice. At the time of his death he had been a governor of the hospital for more than twenty-five years and gave of his utmost in the interests not only of the patients but also his medical colleagues. On his retirement from active service with St. John's in 1946 he was elected to the consulting staff and also continued as a governor, maintaining his close interest in the hospital's affairs. He attended a board meeting a few weeks before his sudden death. Dr. Woodward was a very scholarly man and retained his interest in the classics until the end. He was a keen supporter of the Medico-Legal Society and was interested in and worked for several charities. He was indeed one of the most charitable of men and never spared himself whenever he saw an opportunity to be of help. Our deepest sympathy goes out to Mrs. Woodward, who nursed him so devotedly through several serious illnesses.—P. F. A.

Dr. ARTHUR CHARLES INGRAM died on Dec. 20, 1947, at Bournemouth. He was educated at Felsted School, Cambridge University, and Charing Cross Hospital. He qualified in 1900 and graduated in 1901, subsequently proceeding M.D. and taking the M.R.C.P. He held the Cambridge D.P.H., and he entered the Indian Medical Service in 1904, taking the gold medal for military medicine at Netley. He was at one time professor of pathology in the University of Madras. He left the Service in 1921 with the rank of major and was appointed bacteriologist to the Borough of Bournemouth in 1922, holding this appointment up to the time of his death. His sudden death came as a shock to his friends and colleagues in Bournemouth.

Dr. ELIZABETH COURTAULD, who died on Dec. 26, 1947, had been living in retirement very much crippled for some years. She started medical work at the Royal Free Hospital rather later than usual, as she had taken nursing training earlier. She was in residence at College Hall through all her medical course. After qualifying L.S.A. in 1901 she took the M.D. of Brussels in 1903, and went into general practice for a short time. She then did medical mission work in India, principally at the Church of England Zenana Mission Hospital at Bangalore. In the 1914–18 war she was attached for some time to the Scottish Women's Hospital at Abboye de Royaumont, in France. Although frail physically, she was always at work and took practically no time off—she did not object to the other medical officers taking time off but was merely mildly surprised that they should want to do so. Her bent was medical, but she collaborated with Miss Ivens in any surgical or anaesthetic or other work that wanted doing. She had been in retirement near Halstead for some years enjoying the quiet and the opportunity to keep in touch with her family in that neighbourhood.—L. M. P.

Dr. JOHN HEWETSON WHITESIDE died at Hadlow, Tonbridge, on Dec. 31 at the age of 84. The third son of the Rev. Stephen Whiteside, he was educated at Appleby Grammar School and Edinburgh University, and graduated M.B., C.M. in 1886. He was in general practice in recent years at Armitage, near Rugeley, Staffordshire, and he was medical officer of the Rugeley Cottage Hospital, medical officer and public vaccinator for the Rugeley District, police surgeon, and divisional surgeon to the Rugeley Ambulance Brigade. He had served as a captain in the R.A.M.C. in the 1914–18 war. He was always actively interested in the work of the St. John Ambulance Brigade and he was an expert amateur carpenter. Among other things he made an altar, which is still in use at Armitage Church.

Dr. FRANK HARRIS WHITE died in London on Jan. 2 at the age of 75. A student of the London Hospital, he took the L.S.A. in 1893, the conjoint diploma two years later, and the D.P.H. in 1900. He was at one time aural assistant to the London Hospital, and he was in general practice in the East End of London, first in Bow and later in Poplar, until 1930. He served in the R.A.M.C. in the 1914–18 war and was regimental medical officer to the 17th London Regiment, leaving the service with the rank of major. He was appointed medical officer to the Port of London Authority in 1930, which post he held until the time of his death. He leaves a widow, two sons, and two daughters.

Dr. ANNA POLLOCK MARTIN died in Southampton Hospital on Jan. 5. A daughter of the late Rev. William Martin, who was a missionary in Rajputana, she was born there and educated at the Park School, Glasgow, and at Glasgow University, where she graduated in 1903, proceeding M.D. in 1906. She was in private practice in Ayr for some time before being appointed in 1920 as a Church of Scotland missionary to the Mure Memorial Hospital, Nagpur. This is a large, well-equipped women's hospital which serves a large section of the Central Provinces. In the course of her work there Dr. Martin took a prominent part in the medical and welfare work of the community. In 1942 she was awarded the Kaisar-i-Hind medal for her services in this connexion.

Universities and Colleges

UNIVERSITY OF LONDON

Dr. E. Ashworth Underwood, Director of the Wellcome Historical Medical Museum, will deliver a course of six public lectures on "The Heritage of Medicine" in the Department of Physiology, University College, Gower Street, W.C., on Fridays, at 5 p.m., from Jan. 23 to Feb. 27.

A course of four public lectures on "Some Aspects of General Physiology" will be given by L. E. Bayliss, Ph.D., Reader in Physiology in the University, in the Department of Physiology, University College, on Tuesdays, March 2, 9, 16, and 23, at 5 p.m.

A course of five public lectures on "Some Aspects of Pharmacological Chemistry" will be delivered by F. Bergel, Ph.D., in the Physiology Theatre, Gower Street, W.C., on Tuesdays, at 5.15 p.m., from Jan. 20 to Feb. 17.

Admission to the lectures is free, without ticket. Students and others interested are invited to attend.

Prof. Osten Holsti, professor of general medicine in the University of Helsinki, has come to work at the Postgraduate Medical School of London in the Department of Medicine for three months as a visiting professor. Prof. Holsti has just been honoured on his sixtieth birthday by the issue of a congratulatory number of the *Annales Medicinae Internae Fenniae*, written and dedicated by his pupils. He is one of the leaders of clinical medicine in Finland and has done distinguished work on arthritis, diabetes, and haematology. While he is in London he will take part in teaching and research in the Department of Medicine at the Postgraduate Medical School.

The following candidates have been approved at the examinations indicated:

M.D.—BRANCH I (*Medicine*): D. W. R. Ashby, W. J. Atkinson, T. P. Blanshard, F. E. de W. Cayley, A. H. C. Couch, H. D. Crosswell, E. M. C. Dunlop, C. G. Fagg, J. H. Friend, T. Hanley, S. W. Hinds, E. A. Hunter, S. L. Kaye (*Gold Medal*), P. M. McAllen, Catherine A. Neill, T. Partington, C. E. Quin, H. W. Salmon, G. Shneerson, Esther E. Simpson, Jean V. Simpson, W. F. T. Tatlow, J. W. Thompson, P. A. Thorn, A. S. Watts, D. Weitzman, P. E. D. S. Wilkinson, Judith C. M. Yuill. BRANCH II (*Pathology*): D. B. Brewer, G. Discombe, B. P. Marmion, H. C. Moore, K. B. Rogers. BRANCH IV (*Midwifery and Diseases of Women*): S. F. Hans. BRANCH V (*Hygiene*): J. J. A. Blakely, W. C. D. Lovett, C. D. L. Lycett, C. Seeley. BRANCH VI (*Tropical Medicine*): K. P. Hare (*Gold Medal*), V. G. Patel, A. J. Walker.

UNIVERSITY OF BRISTOL

George Lionel Alexander, F.R.C.S., has been appointed Director of the Neuro-Surgical Unit in the University.

The following candidates have been approved at the examinations indicated:

M.D.—D. N. Walder.

FINAL M.B., CH.B.—Margaret J. Andrews, D. H. Bowden, D. McL. Cunningham, Eudora M. R. Davies, N. M. Gibbs, Pamela H. L. Hamilton, S. F. Iles, Jean E. Morrell, Josephine C. Mulcahy, J. P. Norris, P. W. Seargeant. *In Group I, completing the examination:* Catherine M. Hoyle. *In Group II completing the examination:* C. E. Halliday, Kathleen C. Iles.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—*Part II:* L. B. Thomas

No. 52

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Dec. 27.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1947 (a)	1947 (b)	1947 (c)	1947 (d)	1947 (e)	1946 (Corresponding Week) (a)	1946 (Corresponding Week) (b)	1946 (Corresponding Week) (c)	1946 (Corresponding Week) (d)	1946 (Corresponding Week) (e)
Cerebrospinal fever	26	4	16	1	—	38	3	23	2	1
Deaths		1	1				1	—		
Diphtheria	157	18	65	8	5	180	10	71	56	10
Deaths	6	—	—	—	—	5	1	1	—	—
Dysentery	53	6	27	—	—	55	4	12	2	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	—	—	—	—	—	—	—	—	—	—
Deaths		1					1			
Erysipelas			33	6	1			38	19	3
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				13					46	
Deaths	52	5	6	1	1	104	15	15	3	3
Measles*	2,583	115	278	93	7	7,068	229	224	67	325
Deaths	2	—	2	1	—	5	—	2	—	1
Ophthalmia neonatorum	30	2	13	—	1	41	2	11	—	—
Deaths										
Paratyphoid fever	22	1	1(A)	—	—	6	2	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	690	38	13	3	14	760	41	16	10	6
Deaths (from influenza)†	20	4	—	—	—	33	5	6	1	—
Pneumonia, primary			372	11				389	51	
Deaths		37		8	4		63			10
Polio-encephalitis, acute	4	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	44	2	3	1	2	1	—	—	18	—
Deaths		—					—			
Puerperal fever		—	7		—		1	10		—
Deaths										
Puerperal pyrexia‡	68	6	10	—	—	90	4	7	—	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,469	104	297	18	21	943	67	299	44	33
Deaths	3	—	—	—	—	—	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	2	—	2	1	1	3	—	—	10	2
Deaths	—	—	1	—	—	1	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,141	67	14	27	5	1,149	82	146	80	36
Deaths	5	1	—	—	—	4	—	—	1	1
Deaths (0–1 year)	336	38	77	15	12	590	78	83	23	11
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,577	706	650	150	111	6,260	1031	758	202	166
Annual death rate (per 1,000 persons living)			13·5	9·5				16·7		
Live births	5,351	751	880	156	184	7,548	1018	1127	207	191
Annual rate per 1,000 persons living			17·7	9·8				22·7		
Stillbirths	145	18	26			220	22	38		
Rate per 1,000 total births (including stillborn)			29					33		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

EPIDEMIOLOGICAL NOTES

Paratyphoid at Ipswich

Since Dec. 20, 1947, there have been 22 cases of paratyphoid B notified in Ipswich, with one death, and 8 carriers have been isolated among the contacts. In the county of Suffolk within a radius of a few miles 26 cases have appeared, and there have been 3 cases in Essex.

Dec. 4 and 6 were outstanding dates of presumptive infection in the Ipswich cases up to Jan. 6. The three cases in Essex are not yet linked up with the Ipswich outbreak. Organisms cultured from 35 infections in this outbreak are reported to belong to phage type I.

Investigation of the cases suggested confectionery as the vehicle of infection, the most common reference being to cream-filled buns or cakes. Within a few days an infected person was found who had been handling such foodstuffs for the first three weeks of December. It has not, however, been possible to isolate the organism from samples of such food taken after Dec. 20.

Poliomyelitis in Scotland

The number of suspected and confirmed cases intimated by medical officers of health to the Department of Health for Scotland between June 1, 1947, and the end of the year was approximately 1,675—the highest number ever recorded in Scotland. In June and July together, about 100 cases were notified. Approximately 520 cases were reported in August, and 590 in September. Thereafter the numbers fell to 325 in October, 100 in November, and 43 in December. Suspected cases were reported in every county except Orkney and Ross and Cromarty and in every large burgh except Inverness.

The greatest number of cases reported in any one area was 483 in Glasgow; 138 cases were reported in Edinburgh, 51 in Aberdeen, and 39 in Dundee. In the county areas the greatest number of reported cases was in Ayrshire, with 108 cases. Lanarkshire had 105 cases, and Morayshire and Fife 56 each. No other county or large burgh had more than 50 cases.

The deaths from poliomyelitis usually amount to about 5 to 10% of the cases, and in the 1947 epidemic the total number of deaths recorded in the 16 principal towns in Scotland between June 1 and the end of the year was 69 out of 865 cases.

Poliomyelitis in England and Wales

Notifications of poliomyelitis 59 (44) for the week ended Jan. 3 showed a slight rise on those of the previous week, and those of polio-encephalitis are the same 4 (4). Figures for the previous week are shown in parentheses. It is possible that the Christmas holiday may have led to some delay in notification and that the slight rise may be more apparent than real.

Discussion of Table

In *England and Wales* a large decrease was recorded in the notifications of all infectious diseases except paratyphoid fever, which increased by 16. There were falls in the incidence of measles 626, whooping-cough 558, scarlet fever 594, acute pneumonia 151, and dysentery 30.

The largest falls in the notifications of measles were Lancashire 111, Nottinghamshire 81, Derbyshire 75, Northamptonshire 47. For scarlet fever the most marked declines in incidence were Staffordshire 70 and London 55 and for whooping-cough Lancashire 71 and Middlesex 61.

The fall in the incidence of acute pneumonia was confined to the southern and midland counties. The chief features of the returns for diphtheria were decreases in Lancashire 18 and Essex 15.

Of the 22 notifications of paratyphoid fever 17 were recorded in five administrative areas of Suffolk. In Surrey, Epsom and Ewell M.B., 8 further cases of dysentery were notified, and the only other large return was Lancashire 21. The largest returns of poliomyelitis were Cheshire 4 and Lancashire 4.

In *Scotland* a decreased incidence was recorded for every infectious disease except diphtheria, which increased by 8. There were falls in the incidence of measles 223, acute primary pneumonia 32, whooping-cough 18, and acute poliomyelitis 10. The increase in the incidence of diphtheria was mainly in the western area, where the notifications rose from 40 to 51. Only 3 cases of poliomyelitis were notified, 2 in Glasgow and 1 in the county of East Lothian.

In *Eire* a decreased incidence of infectious diseases was also recorded. The notifications declined for measles 46, scarlet fever 26, and diarrhoea and enteritis 17.

In *Northern Ireland* the chief features of the returns were falls in the notifications of scarlet fever 35, measles 12, and diphtheria 8.

Week Ending January 3

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,786, whooping-cough 1,891, diphtheria 225, measles 4,490, acute pneumonia 1,098, cerebrospinal fever 55, acute poliomyelitis 59, dysentery 86, paratyphoid 39, and typhoid 5.

Medical News

More Beds for Streptomycin Treatment

The total number of beds available at hospitals in the United Kingdom for the treatment of patients with streptomycin has been increased from 150 to about 200, and the following additional hospitals are now able to provide treatment:

University College Hospital, London.
Addenbrooke's Hospital, Cambridge.
Radcliffe Infirmary, Oxford.
King's Cross Hospital, Dundee.

All the hospitals concerned have been asked to continue restricting treatment with the drug to cases of tuberculous meningitis and miliary tuberculosis. Medical practitioners who have such cases should get into touch with the nearest convenient hospital with beds reserved for streptomycin treatment, or, in the case of hospitals in the London area, with the Emergency Bed Service (telephone, Monarch 3000). Other hospitals at which this treatment is available were listed in our issues of Sept. 6, 1947 (p. 399), and Oct. 4, 1947 (p. 555). The Ministry of Health emphasizes that despite these additional beds it is unlikely that all cases of these two types of disease can be accommodated at present.

Dr. Voeller and Parkinson's Disease

The Information Services Directorate of the Foreign Office (German Section) issued the following statement on Jan. 7: "Some publicity has recently been given to reported cures of Parkinson's disease (paralysis agitans) effected by a Dr. Voeller, of Kassel (U.S. Zone of Germany). The story originated from a recommendation alleged to have been made by the notorious Dr. Karl Brandt to a British soldier. Dr. Voeller once owned a private nursing-home in Kassel where he specialized in the treatment of this disease, and where, with close attention to the well-being of his patients, he appeared to obtain some good results. According to Public Health Branch of the Control Commission for Germany (B.E.), there is no truth in the report that Dr. Voeller has discovered a specific cure for Parkinson's disease. It is emphasized that periods of apparent improvement are a characteristic of the development of the disease. Dr. Karl Brandt, Reich Commissioner for Health under Hitler, was sentenced to death by hanging on Aug. 20, 1947, by a United States Military Court at Nuremberg after being found guilty of crimes against humanity and sadistic experiments on human beings in German concentration camps."

M.R.C. Dental Research Committee

The Medical Research Council have recently reconstituted the Dental Research Committee. The secretary of this committee is Prof. M. A. Rushton, Department of Dental Medicine, Guy's Hospital.

Irish Postgraduate School

The Eire Minister for Health has appointed a committee to examine the facilities at St. Kevin's Hospital, Dublin, and to make recommendations about measures needed to establish there a postgraduate medical school for medical officers employed by local authorities.

Psychiatric Committee

The Representative Psychiatric Committee of the North-east Metropolitan Area consists of elected representatives of the medical staffs of the mental hospitals, the mental deficiency institutions, and the psychiatric departments of the teaching and non-teaching general hospitals in the area. It has been in existence since June, 1947, and has as its terms of reference: "To consider and to concern itself with every aspect of the psychiatric services in the region." The committee is under the chairmanship of Dr. Henry Wilson.

Illustrating Pathology

A number of students have been trained at the St. Martin's School of Art in the technique of drawing pathological and surgical specimens. Part of their experience has been gained in operating theatres in London hospitals. Their services are now available for employment by surgeons or hospitals. Inquirers should write to the principal of the school, 109, Charing Cross Road, W.C.2.

Scabies Order

Under the Emergency Laws (Transitional Provisions) Act, 1946, and the Emergency Laws (Miscellaneous Provisions) Act, 1947, Regulation 33A of the Defence (General) Regulations, 1939, expired on Dec. 31, 1947, and the Scabies Order, 1941, which was made under that Regulation, accordingly ceased to be operative after that date. The Regulation and the Scabies Order were introduced as an emergency wartime measure to combat an exceptional increase of scabies. The time has now come, in the view of the Minister of Health, to revert to reliance on normal statutory powers, as contained in the Public Health Acts, for dealing with verminous conditions.

Demand for Blood Increases

During the June quarter 27,546 new donors joined the National Blood Transfusion Service, reports the Ministry of Health. This is about twice as many as in the first quarter. Blood was given by 66,557 donors. The estimated donor panel strength is now about 350,000. To provide for further increases in the demands for blood and plasma, and to ensure that donors are not asked to give blood more often than once every six months, some 168,000 new volunteers are required in England and Wales.

Prof. G. Grey Turner

George Grey Turner, M.S., F.R.C.S., Emeritus Professor of Surgery in the University of London, has been elected an Honorary Member of the Greek Surgical Society and a Corresponding Member of the Royal Academy of Medicine of Belgium.

Freedom of Kirkcudbright

John MacMyn, M.D.Ed., has been given the freedom of the Royal Burgh of Kirkcudbright.

Appointments for War Service

William Archibald Balhetchet, L.M.S., Medical Officer, Malayan Medical Service, has been appointed O.B.E. (Civil Division), and Yeoh Bok Choon, L.M.S., Tutor in Surgery, College of Medicine, Singapore, has been appointed M.B.E. (Civil Division), for services at the Tan Tock Seng Hospital, Singapore, during the enemy occupation.

Wills

Mr. Louis Carnac Rivett, the well-known obstetrician and gynaecologist, who died on Sept. 5, 1947, left £17,793. Dr. Isabella Macdonald Macdonald, formerly consulting physician to the Elizabeth Garrett Anderson Hospital, left £17,590. Dr. Herbert William Allan, late M.O.H. for Wells, left £1,333. Dr. Sidney Herbert Daukes, formerly curator of the Wellcome Museum, who wrote novels under the pseudonym of Sidney Fairway, left £6,490.

COMING EVENTS

Ophthalmological Society of the United Kingdom

The annual congress of the Ophthalmological Society of the United Kingdom will be held at the Royal Society of Medicine, 1, Wimpole Street, London, W., on Thursday, Friday, and Saturday, April 8, 9, and 10, when the subject for discussion will be "Subjective Disorders of Vision (excluding those due to local ocular disease)," to be opened by Dr. Macdonald Critchley, Prof. Henry Cohen, and Mr. J. H. Doggart. The Bowman Lecture will be delivered by Prof. Marc Amsler (Zurich). Members who wish to read papers are asked to send the titles to Mr. T. Keith Lyle, F.R.C.S. (honorary secretary for congress business), 42, Charles Street, Berkeley Square, London, W.1, as soon as possible. Abstracts of papers, which will be circulated at the congress and subsequently to the leading ophthalmological journals abroad, should be submitted by Jan. 31. On Friday afternoon (April 9) there will be a joint clinical meeting with the Ophthalmological Section of the Royal Society of Medicine at the Ophthalmic Institute, Central London Ophthalmic Hospital, Judd Street, London, W.C. Those who wish to show cases are asked to communicate with the registrar-tutor, Mr. H. Ryan, at the hospital. The annual dinner will be held at the Royal College of Surgeons of England (Lincoln's Inn Fields, London, W.C.) on Thursday, April 8. Owing to official restrictions the numbers on this occasion will be limited to 100, and it is regretted that it will not be possible to allow members to bring guests.

Association of Clinical Pathologists

The 39th scientific meeting of the Association of Clinical Pathologists will be held at St. Mary's Hospital, London, W., on Friday and Saturday, Jan. 30 and 31. The programme is as follows: Jan. 30, 9.30 a.m., Prof. R. J. V. Pulvertaft, Stabilization of penicillin solutions by phosphates; 9.45 a.m., Dr. J. Ungar, Comparison of penicillin blood levels after aqueous solutions and oily suspensions of penicillin; 10.5 a.m., Dr. M. Daniels, The value of streptomycin; 10.35 a.m., Dr. Tullio de Sanctis Monaldi, Modification du liquide céphalorachidien dans la méningite tuberculeuse, traitée par la streptomycine; 11.25 a.m., Dr. G. B. Forbes, Relative merits of laryngeal

swabs and fasting stomach contents in the detection of tubercle bacilli; 11.50 a.m., Dr. A. F. S. Sladden, A convenient technique for the Aschheim-Zondek Test; 12.15 p.m., Mr. R. E. Glover, Supply of laboratory animals; 12.35 p.m., Dr. Georgiana M. Bonser, Pigmented tumours of the skin; 4.30 p.m., Presidential address by Dr. C. E. Dukes, Human relationships in clinical pathology; 5.10 p.m., presentation to Dr. S. C. Dyke (Founder of the Association); 5.15 p.m., Reply by Dr. Dyke with an address entitled "Genesis." Jan. 31, 9.30 a.m., Dr. K. S. Thompson, Evolution of an antiseptic lubricant; 9.55 a.m., Dr. R. M. Haines, Observation on the histology of tuberculous endometritis; 10.15 a.m., Mr. J. T. Duncan, Histoplasmosis; 10.40 a.m., Dr. J. R. O'Brien, Significance of the bleeding time; 11.30 a.m., Dr. J. V. Joossens, Reticulocyte counts by fluorescence microscopy; 11.50 a.m., Dr. G. Discombe and Mr. H. Meyer, Capillary method of rhesus grouping; 12.10 p.m., Dr. J. Harkness, Significance in clinical pathology of the variations in the hypothetical equilibrium of the plasma proteins; Dr. W. W. Payne, Biochemical aspects of gastro-enteritis; 2.30 p.m., Dr. J. C. Colbeck, Air embolism and the method of post-mortem diagnosis; 2.55 p.m., Dr. C. J. Lind, Blood alcohol, its determination and interpretation; 3.15 p.m., Dr. F. E. Camps, Medico-legal problems of the newborn child; 3.40 p.m., Mr. H. S. Holden, Laboratory aspects of drowning. Demonstrations will be given from 2 p.m. on Jan. 30 to 12 noon on Jan. 31. The honorary secretary of the association is: Dr. W. H. McMenemey, Royal Infirmary, Worcester.

Services Hygiene Officers' Dinner

A reunion dinner of the Navy, Army, and Air Force Hygiene Group of the Society of Medical Officers of Health will be held at Stewart's Quadrant Restaurant, 74, Regent Street, London, W., on Friday, Jan. 30, at 6.45 for 7.15 p.m. Any serving or former hygiene officers in any of the Services will be welcome. Early applications for tickets should be made to the honorary secretary, Dr. H. D. Chalke, O.B.E., Public Health Department, 33–5, Lancaster Grove, London, N.W.3, enclosing remittance for 16s. 6d. (which includes coffee and tips but not wines or spirits). The chair at the dinner will be taken by the Group's president, Brigadier A. E. Richmond, C.B.E., Director of Hygiene, A.M.S., who at 5.30 p.m. the same day will deliver his presidential address on "The Army's Health in 1947" at B.M.A. House, Tavistock Square, London, W.C.

American Group Therapy Association

The annual meeting of the American Group Therapy Association will be held at Hotel Commodore, New York City, on Sunday, April 11, 1948. The programme will include case presentation and discussion and an evening session devoted to reports and evaluation of current practices and trends in group therapy. A copy of the preliminary programme and further information may be obtained from the association at 228, East 19th Street, New York 3, N.Y., U.S.A.

SOCIETIES AND LECTURES

Monday

HUNTERIAN SOCIETY.—At the Mansion House, London, E.C., Jan. 19, 8.30 p.m. *"Recent Improvements in the Diagnosis and Treatment of Vascular Obstruction."* Hunterian Lecture by Prof. J. Cid Dos Santos (Lisbon).

Tuesday

EUGENICS SOCIETY.—At Royal Society's rooms, Burlington House, Piccadilly, London, W., Jan. 20, 5.30 p.m. *"Sex Limitation in Human Genetics."* Dr. H. Harris.

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C., Jan. 20, 5 p.m. *Pathological Demonstrations.* Dr. I. Muende.

SOCIETY FOR THE STUDY OF ADDICTION.—At Medical Society of London, 11, Chandos Street, W., Jan. 20, 4 p.m. *"Economic Aspects of Tobacco Addiction."* Mr. V. Zachary Cope. Followed by discussion.

UNIVERSITY COLLEGE LONDON: DEPARTMENT OF PHARMACOLOGY.—Jan. 20, 5.15 p.m. *"Introduction: Pharmacology and the Chemical Sciences."* Mr. F. Bergel.

Wednesday

ROYAL MICROSCOPICAL SOCIETY.—At B.M.A. House, Tavistock Square, London, W.C., Jan. 21, 5 p.m. for 5.30 p.m. *"Relation between Cellular Structure and Functional Activity."* Presidential Address by R. J. Ludford, Ph.D., D.Sc.

ROYAL SANITARY INSTITUTE.—At Town Hall, Colchester, Jan. 21, 2 p.m. *"The Implementation of the National Health Service Act in County Districts."* Dr. J. D. Kershaw.

Thursday

MEDICO-LEGAL SOCIETY.—At 26, Portland Place, London, Jan. 22, 8.15 p.m. *"The Office and Duties of the Director of Public Prosecutions."* Sir Theobald Mathew, Director of Public Prosecutions.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, London, S.W.—Jan. 22, 4.30 p.m. *Neurological lecture-demonstration.* Dr. A. Feiling.

Friday

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS, 58, Queen Anne Street, W.—Jan. 23, 5 p.m. *"Primary Carcinoma of the Vagina."* William Blair-Bell Memorial Lecture by Dr. Stanley A. Way.

LONDON CHEST HOSPITAL, Victoria Park, E.—Jan. 23, 5 p.m. *"Radiological Diagnosis in Trauma of the Lungs."* Dr. C. J. Hodson.

MIDDLESEX COUNTY MEDICAL SOCIETY.—At Hillingdon County Hospital, near Uxbridge, Jan. 23, 3 p.m. Agenda: Demonstration of clinical cases and pathological material, including cases of congenital disease of lungs, heart, and aortic arches. The Department of Physical Medicine is open and there will be demonstrations of cases and treatment. *"Physical Methods in Rehabilitation."* Short paper by Dr. Talbot; *"Value of Radiology in Diagnosis of Acute Abdomen."* Short paper by Dr. Maddocks.

ROYAL MEDICAL SOCIETY, 7, Melbourne Place, Edinburgh.—Jan. 23, 8 p.m. *"Body and Mind."* Address by Mr. K. M. Walker.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—At South Kensington Hotel, 41, Queen's Gate, S.W., Jan. 23, 8.30 p.m. *"Modern Surgical Treatment of Chronic Peptic Ulcer."* Opening speakers, Dr. A. Morton Gill and Mr. I. M. Orr. Discussion.

UNIVERSITY COLLEGE LONDON: DEPARTMENT OF PHYSIOLOGY.—Jan. 23, 5 p.m. *"The Fabric of the Human Body."* Dr. E. A. Underwood.

Saturday

BIOCHEMICAL SOCIETY.—At British Postgraduate Medical School, Ducane Road, Hammersmith, London, W., Jan. 24, 11 a.m. 263rd meeting.

BRITISH ASSOCIATION OF ALLERGISTS.—At Wright–Fleming Institute of Microbiology, St. Mary's Hospital, Paddington, London, W., Jan. 24, 2.30 p.m. First general meeting. *"Forty Years of Allergy."* Dr. John Freeman; *"Advancing to the Future in Allergy—A Brief Survey."* Mr. Frank Coke.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.—At 11, Chandos Street, London, W., Jan. 24, 2.30 p.m. *"Treatment of Neurosyphilis with Penicillin."* Dr. J. Purdon Martin. Discussion.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Anscombe.—On Dec. 28, 1947, at Crumpsall Hospital, Manchester, to Maureen (*née* Macandrew, M.B., Ch.B.), wife of Dr. A. R. Anscombe, a son.

Aspin.—On Jan. 5, 1948, at The Willows Nursing Home, Bramley, Leeds, to Alice and Dr. John Aspin, a daughter.

Gifford.—On Jan. 3, 1948, at Mill Road Hospital, Liverpool, to Gwen (*née* Hayes), wife of Dr. J. Hamilton Gifford, a daughter—Valerie.

Hay.—On Dec. 15, 1947, at Sunderland, to Vera (*née* Brown), and Dr. Arthur W. Hay, a daughter—Vivienne Margaret.

Maughan.—On Jan. 10, 1948, at Newcastle-upon-Tyne, to Rebe Monica (*née* Hastings), M.A., D.Th.P.T., wife of John H. Maughan, M.B., B.S., C.P.H., a son.

Pickard.—On Dec. 15, 1947 at West Kent General Hospital, Maidstone, to Joan and Brian Pickard, of Priory Tower, Priory Park, Blackheath, a second daughter—Celia Jane.

DEATHS

André.—On Jan. 5, 1948, James Edward Felix André, M.R.C.S., L.R.C.P., of Highleigh, Sidlesham, Chichester, aged 83.

Chandler.—On Jan. 7, 1948, at a nursing home in Sidmouth, Francis William Chandler, M.B., B.S., late of Woodseats, Sheffield, aged 79.

Eales.—On Jan. 5, 1948, at St. Andrews, Bronshill Road, Torquay, George Young Eales, M.R.C.S., L.R.C.P., aged 88.

Firth.—On Jan. 9, 1948, Arthur Charles Douglas Firth, M.D., F.R.C.P., of 236, Hills Road, Cambridge.

Gleeson.—On Jan. 7, 1948, Olaf Gleeson, M.R.C.S., L.R.C.P., of 10, Harley Street, London, W.

Hulbert.—On Jan. 4, 1948, at Hartley Witney, Joseph George Hulbert, M.B., B.Ch., Lieutenant-Colonel, late I.M.S., aged 80.

Jenner.—On Jan. 7, 1948, at 20, Birchwood Road, Petts Wood, Kent, Wesley John Jenner, M.D., F.R.C.S.Ed., aged 77.

Jones.—On Jan. 9, 1948, at Monkreddan House, Prestwick, Ayrshire, Arnold Ernest Jones, M.B., Ch.B.

Martin.—On Jan. 5, 1948, at Southampton, Anna Pollock Martin, M.D., M.R.C.O.G., late of Nagpur, India.

Popert.—On Jan. 5, 1948, at 11, Albert Road, Southport, Adolphe Joseph Popert, M.R.C.S., aged 93

Reade.—At "Riversley," Banbridge, Northern Ireland, Thomas Edwards Reade, M.B., B.Ch.

Selkirk.—On Jan. 5, 1948, at a nursing home, Edinburgh, Elizabeth Thompson Selkirk, M.B., Ch.B

Stich.—On Jan. 6, 1948, at Kent County Hospital, Pembury, Alexander Benham Stich, M.B., Ch.B., aged 58.

Swan.—On Jan. 7, 1948, at Highgate Hospital, James Herbert Swan, L.R.C.P.I.&L.M., D.P.H., of 22, Dartmouth Park Hill, London, N.W.

Wigmore.—On Jan. 3, 1948, at Hereford, Alfred James Wigmore, M.R.C.S., L.R.C.P., aged 71.

Woodman.—On Dec. 29, 1947, at The Cottage, Avonmouth, Mandeville, Jamaica, B.W.I., William James Woodman, M.R.C.S., L.R.C.P., Colonial Medical Service, retired, aged 75.

Woodward.—On Dec. 29, 1947, at 35, Roker Park Road, Sunderland, Alexander Taylor Woodward, M.B., Ch.B., aged 52.

Woodward.—On Jan. 2, 1948, Henry Martin Mogridge Woodward, M.R.C.S., L.R.C.P.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Treatment of Warts

Q.—*What treatment is suggested for warts on the fingers? Silver nitrate and podophyllin have been unsuccessful.*

A.—Treatment may be radical, by curettage. Many warts are radio-sensitive and clear up with a fractional dose of *x* rays. Other measures commonly employed may be effective by suggestion. Podophyllin is not helpful in this type of wart.

Hyperplasia of Tonsil

Q.—*What are the pathogenesis, nature, significance, and treatment of the fluid, or cheesy material, often offensive, frequently found in the crypts of the tonsils? There does not seem to be any evidence of inflammation in these cases, but a history of tonsillitis is often elicited. Do such tonsils have a toxic influence? Massage, syringing, and suction of the tonsils do not seem to cure, but a diet poor in starch is helpful. Is there any other treatment short of removal of the tonsils, which the patient wishes to avoid?*

A.—The cause of this condition is hyperplasia of the tonsil, leading to the formation of deep crypts, the orifices of which are narrow or actually occluded. The material which accumulates in these crypts consists chiefly of shed epithelial cells, together with a variety of bacteria, the growth of which causes decomposition of the material. Such bacteria are not necessarily pathogenic, but carriers harbour haemolytic streptococci and diphtheria bacilli in the same inaccessible situation, which accounts for the difficulty of abolishing the carrier state by any means short of tonsillectomy. It seems improbable that the absorption of the contents of such crypts could cause toxic effects; in so far as these are observed they are more likely to result from actual infection of the substance of the tonsil, with or without the acute exacerbations to which these patients are subject.

Tonsils exuding thin pus containing pathogenic organisms may be considered a source of toxaemia; those exuding cheesy material are probably not, in spite of the unpleasant symptoms they produce. In both cases the only effective treatment to secure a permanent cure is tonsillectomy.

Drug Addiction

Q.—(*a*) *What procedure—therapeutic and/or statutory—should a general practitioner follow when confronted with a case of addiction to a scheduled drug? Can any compulsion be brought to bear on patient or relatives to secure either treatment or responsible supervision?*

(*b*) *A woman aged 30, with three children, has become addicted to pethidine since having injections for attacks of trigeminal neuralgia a year ago. What treatment would you suggest?*

A.—(*a*) Addiction to drugs usually implies a morbid craving for one of the opium alkaloids or similar synthetic preparations, or for cocaine or one of its derivatives. This seldom occurs except in persons of abnormal mentality, so that treatment usually requires the services of an expert psychiatrist. It is almost always impossible to treat the patient satisfactorily except in an institution with special arrangements for strict control, to prevent surreptitious supplies of the drug continuing to reach the addict. The general practitioner is seldom called upon to do more than persuade the patient to enter a suitable institution for detoxication and the first steps towards mental and physical rehabilitation. After these steps have been taken a great deal remains to be done to prevent relapse, and here a wise family physician with a strong, sympathetic personality can do more than any specialist. The details of the treatment in the early stages must be adapted to the individual case, and cannot easily be summarized in a short article—the subject is well dealt with in standard books of reference.

If the patient proves completely uncooperative it may be necessary to invoke the aid of the law to apply compulsion. Since most of the drugs concerned are included in the scope of the Dangerous Drugs Acts, 1920–5, it is often possible to prove an offence against these Acts for which the patient may be summoned before a magistrate. If this be done, and the facts proved, it is open to the Court to bind the defendant over on condition that he enters a suitable institution and follows a prescribed course of treatment, failing which he becomes liable to the heavy penalties, including fine or imprisonment, provided under these Acts.

(*b*) As in every case of drug addiction, the patient must be admitted to a hospital or nursing-home for the treatment. Withdrawal symptoms of pethidine are, so far as is known, slight and harmless compared with those of morphine. The drug should be reduced by 20% of the addiction dose daily, so that at the end of five days it is discontinued. This should be followed by remedial exercises aiming at producing bodily fatigue. A psychiatrist should be asked to deal with his side of the problem. Return home should not be before three months. Pethidine is now subject to the Dangerous Drugs Acts.

Fat Atrophy due to Insulin Injections

Q.—*In a diabetic woman who has been having 20 units of protamine insulin a day for the past year all the usual sites for injection have become impossible owing to absorption of subcutaneous fat. Has this condition been recognized before, how is it brought about, and what can be done to prevent it?*

A.—The condition was recognized soon after the use of insulin began. The only way of preventing it is to change the type of insulin as soon as the fat atrophy appears and choose the one which causes least damage. The site of injection should always be varied as much as possible, even though the patient is not sensitive to the insulin. Even after fat atrophy has occurred the insulin seems to be well absorbed.

Treatment of Alopecia

Q.—*Is p-aminobenzoic acid effective in the treatment of alopecia? What is the accepted modern treatment?*

A.—There are almost certainly many causes of alopecia, and one may be a deficiency of *p*-aminobenzoic acid. But there is no indication that *p*-aminobenzoic acid has any effect on growth of hair, and the evidence that it affects the colour of the hair is contradictory. Alopecia areata is an individual or sometimes a family pattern of reaction to disturbances of health or tone, and treatment turns upon the restoration of health and readjustment. Any general medical treatment is symptomatic, and local treatment is essentially directed towards stimulation of regrowth by counter-irritation, which can be effected by a variety of local applications as detailed in textbooks.

Vitamin B Content of Yeast

Q.—(*a*) *Does yeast contain all the vitamin B requisites for the body?* (*b*) *What quantities should a 10-stone (63.5-kg.) man take daily?* (*c*) *Is autolysed yeast better than yeast not so treated? Can I autolyse it myself?* (*d*) *Is yeast bought at the local baker's as good as that prepared by adding a pinch of hops and a dessertspoonful of flour to half a pint (284 ml.) of water, sealing, and leaving in a warm place for three days?* (*e*) *Should the taking of yeast have any relation to meal-times?*

A.—(*a*) The only vitamins of the B complex that are known to be essential for man are thiamine, nicotinic acid, and riboflavin. Others may be necessary, but there is no clinical evidence of this at present. Yeast contains thiamine, nicotinic acid, and riboflavin. (*b*) It is impossible to say what dose a 10-stone male should take. The vitamin potency of yeast is extremely variable, depending on the source, the strain of the yeast, the medium in which it grows, and its age. The writer has noted only one type of commercially available yeast of declared potency, and this contains approximately 25 mg. aneurin, 7 to 9 mg. nicotinic acid, and 1.4 mg. of riboflavin per ounce (28 g.). Thus 1 ounce daily with the food would provide enough of all the B vitamins, and actually ten times

as much aneurin as is needed. Such yeast can also be obtained in tablet form. (*c*) Autolysed yeast is best, because only about 20% of the vitamins are available in live yeast. The best plan is to pour boiling water on the yeast to kill the cells before it is eaten. (*d*) Yeast bought at the local baker's is unsatisfactory as a source of B vitamins, as it is of unknown potency. Thus the aneurin content may vary from 0.03 to 2 mg. per ounce. For the same reason home-made yeast is unsatisfactory. Incidentally yeast cannot be prepared by the method described, which would encourage the growth of many moulds and organisms. (*e*) From the point of view of absorption of the vitamins, it does not matter whether yeast is taken with meals or not.

Removal of Naevus

Q.—*My daughter, aged 11 months, has a naevus about the size of a sixpence on her forehead at the junction of hair and skin. It is slightly raised and rather disfiguring. What is the best treatment?*

A.—The naevus would appear to be a superficial cavernous angioma, a strawberry mark, and is likely to disappear spontaneously in the course of a few years. It should readily clear if frozen with a pencil of carbon-dioxide snow for twenty seconds. Unfiltered *x* rays, 600 r units (60 kV, 4 mA), would also favour gradual resolution, and neither treatment should produce scarring to interfere with hair growth.

Irregular Menstruation

Q.—*Is it possible to use stilboestrol in the case of a woman nearing the menopause whose periods are becoming irregular? If so, what is the optimum dosage, and would prolonged administration be dangerous? Is there any risk if the delay is due to pregnancy?*

A.—If the only "menopausal" symptom is irregularity of menstruation, treatment with stilboestrol or other oestrogens is rarely, if ever, indicated. If the irregularity takes the form of periods of amenorrhoea, no attempt should be made to re-establish menstruation; whereas if it is characterized by prolonged or heavy bleeding, diagnostic curettage should be carried out. The only possible indication is in those cases where prolonged bleeding has been shown (by histological examination of the endometrium) to be of the "threshold" type. The indiscriminate and prolonged use of stilboestrol at the menopause has real disadvantages. Unless the dose is controlled very carefully it is likely to cause endometrial hyperplasia and heavy bleeding, and in theory at any rate might cause carcinoma of the uterus. Moreover, if such treatment is suspended suddenly, flushes and other manifestations of the menopause may be precipitated. Stilboestrol even in large doses will not disturb a normal pregnancy.

Mixed Diphtheria Toxoid and Pertussis Vaccine

Q.—*In inoculation with mixed diphtheria A.P.T. and pertussis vaccine (alum-precipitated) it is recommended that three injections be given at intervals of four weeks. When the patient is not brought up to time, should one anticipate any severe reaction, and is protection adequate with a longer interval between the first and second injections? If a fresh course should be started, what interval should elapse between the first injection of the new course and the first injection of the abandoned course?*

A.—It has been well established experimentally that in immunization against diphtheria with A.P.T. the second injection, even if it is given six to twelve months after the first injection, will still elicit a good antibody reaction provided the first dose has been adequate to sensitize or prepare the tissues for response to the secondary stimulus. The risk of any severe reaction is not increased by a long interval between first and second doses, but of course if the second injection is delayed unduly the child in the meantime cannot be regarded as having been effectively immunized against diphtheria. The same principles presumably apply to the use of a mixed antigen of diphtheria toxoid and pertussis vaccine; there is no objection to combining these two antigens, provided each has been shown to be effective separately.

NOTES AND COMMENTS

Enuresis in Young Adults.—Mr. H. P. WINSBURY-WHITE (London, W.) writes: In the *Journal* of Dec. 20, 1947 (p. 1016), a question is asked in these words: "Can anything be done to benefit chronic enuresis in young adults? In the case I have in mind full neurological and urological examinations have proved negative." The points of fundamental importance in this matter are that what is called a full urological examination commonly omits a urethroscopy, and that young adults with enuresis frequently have a lesion in the urethra, and the appropriate treatment of such a lesion generally results in a marked improvement or a cure of the enuresis. Let me recount the facts of a recent case, a male of 19 years.

At the age of 14 he started bed-wetting two or three times a week, and had one-hourly frequency during the day. At the age of 16 a full urological examination, which included urethroscopy, had been carried out, when the only abnormalities to be found were granulomatous changes on the verumontanum and in the prostatic sinuses, and there was slight narrowing of the whole urethra. As a result of a single urethral dilatation the patient had only two wet beds in the course of the first three months after this treatment. Then he went for the next twelve months without a single wet bed; no further treatment was given during that time. He then began to relapse slowly and further urethral dilatations did not help him. Urethroscopy at the age of 19 showed granulomata still present as before. These I fulgurated two months ago, with immediate benefit, the frequency being reduced from one to three hours, and the enuresis to no more than three occasions in five weeks; whereas previous to operation he had been having one or two wet beds every week.

The benefit to the patient's mental state from the improvement he again experienced was certainly a gratifying and interesting feature of the case. This patient will certainly need further supervision and probably more treatment, in which circumstances I consider the prospects good.

Corrections

In our report (Dec. 27, p. 1049) of a meeting of the Section of Otology of the Royal Society of Medicine, the statement "Mr. Gavin Young said that formerly cases of acute mastoiditis were met with once or twice a year," should have read "cases of *latent* acute mastoiditis."

In reporting a meeting of the Section of Psychiatry of the Royal Society of Medicine (Dec. 27, p. 1048) some remarks made by the previous speaker were erroneously attributed to Dr. Melanie Klein. What Dr. Klein actually said was: "In considering the importance of aggression in the emotional life of the infant, we have to give full weight to the fact that aggression, since it is primarily directed against loved people—first of all the mother—gives rise to feelings of guilt and to the drive to make reparation. The tendency to make reparation enters into all sublimations and influences feelings of love and the relation to people. In these ways aggression forms a bridge between hatred and love. Freud pointed out many years ago the importance of the sublimation of aggression and the social effects of these processes. Further work, particularly carried out in the British Psycho-Analytical Society over the last twenty years and based on the psycho-analysis of children, has led to the recognition of the importance of the tendency to make reparation for aggressive impulses and phantasies."

In our obituary notice of the late Mr. G. F. Stebbing (Jan. 3, p. 28) it was stated that he had been "a member and honorary secretary of the Radium Commission from its formation in 1929." We are now informed that this was not the case. Prof. Sidney Russ was Scientific Secretary of the National Radium Commission from 1929 until 1935.

Dr. R. T. BRAIN points out that in his note on "Ringworm of Scalp" (Jan. 10, p. 86) thorium X was written in error for thallium acetate.

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